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### Plant hosts of Thrips (Insecta: Thysanoptera) from NE India

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**Abstract:** The relation between thrips and plant hosts has been analyzed on the basis of collection of insects from diverse plants. In the random survey carried out in the selected regions of NE India, 106 species of thrips belonging to the suborders, Terebrantia and Tubulifera were collected from over 90 plant species in 44 families. Of the 106 herbivorous thrips, 63 species belong to the family Thripidae and the remaining 43 under Phlaeothripidae. In terms of number of thrips species collected from diverse plants, maximum number of insects was collected from the grasses of the family Poaceae, followed by members of Fagaceae, Moraceae, Asteraceae and Fabaceae, while the rest of families contributed just one or two species. Further, the plants *Ricinus communis* and *Bixa orellana* respectively could harbor 4 and 6 species of thrips. Occurrence of particular thrips species on certain plant host and the association of thrips with members of selected plant families reflect perceptible level of host specificity.

**Keywords:** Thrips, Thysanoptera, Plant hosts, North East India

#### INTRODUCTION

Thrips are minute insects of the order Thysanoptera and can be distinguished from other insects with the presence of fringes on wings, protrusible bladder at the tarsal end of legs and with only left functional mandible for piercing and sucking mode of feeding (Ananthakrishnan, 1993). They are so diverse in terms of feeding habit that thrips feed on pollen grains, fungal spores, mycelia and plant sap besides,

predate upon small insect pests (Mound, 2005). As many as 6161 species in 782 genera of thysanopterans are known from different regions of the World (Thripswiki referred on 24<sup>th</sup> April, 2018). Of the total fauna of thrips, 8% of them are recorded from India, with over 200 species from the north-eastern part of our country (Varatharajan, 2005). With the objective to undertake thrips survey in the biodiversity rich regions of the NE India, attempts

were made to collect thrips during the last one decade from diverse species of plants. The present paper aims at to find out the association between thrips and plants in terms of their occurrence on varied hosts.

## MATERIALS AND METHODS

Thrips survey was undertaken at different places of north-eastern India. Thrips were collected at random by conventional methods such as tapping the twigs/leaves on the board, trapping them with yellow pan water traps, plucking the flowers and galled leaf from the field and examining them in the laboratory. Simultaneously the plant parts are processed for herbarium preservation and identified with the help of experts. The collected thrips specimens were balsm mounted for permanent preservation following the protocol mentioned in the following web site ([https://thrips.info/wiki/Collecting\\_and\\_preparing\\_thrips\\_for\\_study](https://thrips.info/wiki/Collecting_and_preparing_thrips_for_study)). Determination of thrips species was attempted by referring relevant literature (Ananthakrishnan and Sen, 1980; Dang *et al.*, 2014; Mound and NG, 2009; Palmer *et al.*, 1989; Sen *et al.*, 1988) and also few other reference slides. Based on such data, systematic chart was prepared separately for grass inhabiting, gall inducing, leaf infesting and flower dwelling thrips.

## RESULTS AND DISCUSSION

The outcome of the survey carried out at different parts of north-eastern India revealed the occurrence of 106 species of thrips belonging to the suborders Terebrantia and Tubulifera. Among them, 63 species represented the family Thripidae and the remaining 43 under Phlaeothripidae. All these insects were collected from nearly 90 plant hosts of 44 families. The compilation of data clearly revealed that the plant families such as Poaceae, Fagaceae, Moraceae could harbour as many as 11 species of thrips each, followed by Asteraceae and Bixaceae with 6 species,

Euphorbiaceae with 4, Solanaceae, Cyperaceae and Rubiaceae with 3 species each, while the rest showed either 1 or 2 thrips species. It is significant to note that *Ricinus communis* and *Bixa orellana* could harbor respectively 4 and 6 species of thrips. Further, all the 106 species of thrips were categorized into grass and flower dwelling forms, leaf infesting thrips and gall inducing forms, besides the pest species (Table 1A to 1E; Tables 2 & 3). Classifying thrips in to different groups was made possible by virtue of their intimate link with the host as like gall inducing habit; thrips dwelling within the flowers and feeding on the pollen & nectar, and insect invading the leaf and sucking the plant sap etc. Data pertaining to their numerical strength not only revealed the diversity of thrips and plants, but also indirectly projects the existence of association between them. Moreover, the micro-niche of thrips is unique that it may be a single floret of the capitulum of Asteraceae flowers or a spikelet of grass inflorescence or a small flower like Jasmine or simple marginal leaf roll or single unit of horn gall or pouch gall. Occupying the specialized niche stated above is an art by itself. However, it is not feasible to achieve this, unless and until the insect maintains such relation with the plant. Collection of immature stages of thrips substantiates further that the insect makes use of such micro-niches both for feeding and breeding (Fig-1). It is worth mentioning here that the genus *Cycadothrips* has been erected to appreciate the involvement of *Cycadothrips* in pollen transfer dynamics of several species of *Macrozamia* cycads (Mound & Terry, 2001). Similarly members of the genera *Kladothrips* and *Crotonothrips* associate with *Acacia* and *Memecylon* respectively and induce different types of gall that being unique for each cecidozoan concerned (Mound, 1997; Ananthakrishnan, 1984). It is known that the plant genus *Acacia* supports a single lineage of phlaeothripine thrips that comprises at least 250 species (Morris *et al.* 2002). The flowers of Fabaceae support members of *Odontothripella*. Nine species of *Leenwenia* have been recorded from the Oriental

**Table 1**  
**List of thrips and their plant hosts**

**A. Grass infesting thrips (Terebrantia: Thripidae)**

Sl	Thrips species	Host plant (Family)
1.	<i>Anaphothrips sudanensis</i> Trybom, 1911	<i>Dactyloctenium aegypticum</i> Beauv. ; <i>Cynodon dactylon</i> Pers. (Poaceae)
2.	<i>Asprothrips indicus</i> (Bagnall, 1919)	<i>Cephalostachyum capitatum</i> Munro. (Poaceae)
3.	<i>Bolacothrips indicus</i> Ananth., 1966	<i>Wenlandia pendula</i> DC. (Rubiaceae)
4.	<i>Brevithrips tumiceps</i> Bhatti, 1967	<i>Ricinus communis</i> Linn. (Euphorbiaceae) <i>Coix lachryma</i> Jobil. (Poaceae)
5.	<i>Caliothrips luckmanni</i> Wilson, 1975	<i>Cyperus diffuses</i> Vah. (Cyperaceae)
6.	<i>Fulmekiola serrata</i> Kobus, 1893	<i>Saccharum officinalis</i> (Poaceae)
7.	<i>Heliothrips parvus</i> Bhatti, 1968	<i>Cyrtococcum aurescens</i> (Trins.) (Poaceae)
8.	<i>Heliothrips haemorrhoidalis</i> (Bouche, 1833)	<i>Dendrocalamus longifimbriatus</i> Gamble. (Poaceae)
9.	<i>Monilothrips kempfi</i> Moulton, 1929	<i>Dryopteris</i> sp. (Polypodiaceae)
10.	<i>Neobydatothrips samayunkur</i> (Kudo, 1995)	<i>Setaria pallidifusca</i> (Sehm.) Stapf. (Poaceae); <i>Tagetes erecta</i> L. (Asteraceae)
11.	<i>Parabaliotrips coluckeus</i> (Kudo, 1977)	<i>Quercus serrata</i> Thunb. (Fagaceae)
12.	<i>Phibalothrips peringueyi</i> (Faure, 1925)	<i>Paspalum orbiculare</i> G. Forst. (Poaceae) <i>Ophipogon intermedius</i> D. Don (Haemodoraceae)
13.	<i>Rhamphothrips pardus</i> (Bhatti, 1967)	<i>Achyranthus aspera</i> Linn. (Amaranthaceae)
14.	<i>Rhamphothrips parviceps</i> (Hood, 1919)	Wild grass
15.	<i>Rhipiphorothrip pulchellus</i> Morgan, 1913	<i>Cynodon dactylon</i> (Poaceae)
16.	<i>Stenchaetothrips tenebrius</i> (Ananthakrishnan & Jagadish, 1968)	Wild grass
17.	<i>Thrips formosanus</i> Priesner, 1934	<i>Bambusa</i> sp. (Poaceae)
18.	<i>Thrips pallidulus</i> Bagnall, 1924	<i>Thysanolaena maxima</i> (Roxb.) Kunz. (Poaceae)
19.	<i>Thrips xenos</i> Bhatti, 1980	Wild Grass

**B. Flower thrips (Terebrantia: Thripidae)**

Sl	Thrips species	Host plant (Family)
1.	<i>Ayyaria chaetophora</i> Karny, 1926	<i>Dolichos lablab</i> ; <i>Glycine max</i> Merrill (Fabaceae);
2.	<i>Chaetanaphothrips orchidii</i> (Moulton, 1907)	<i>Dendrobium</i> sp. (Orchidaceae)
3.	<i>Dichromothrips nakabari</i> Mound, 1976	<i>Dendrobium</i> sp. (Orchidaceae) <i>Chenopodium</i> sp. (Chenopodiaceae)
5.	<i>Ceratothripoides claratris</i> (Shumsher, 1946)	<i>Solanum melongena</i> (Solanaceae)
6.	<i>Frankliniella intonsa</i> (Trybom, 1895)	<i>Ageratum conyzoides</i> Linn. (Asteraceae) <i>Eupatorium cannabinum</i> Linn. (Asteraceae)
7.	<i>Lefroythrips lefroyi</i> (Bagnall, 1913)	<i>Cycas</i> sp. (Cycadaceae)
8.	<i>Megalurothrips mucunae</i> (Priesner, 1938)	<i>Phaseolus lunatus</i> Linn. & flowers of <i>Cassia</i> sp. (Fabaceae)
9.	<i>Megalurothrips peculiaris</i> (Bagnall, 1918)	<i>Dolichos lablab</i> . (Fabaceae)
10.	<i>Megalurothrips typicus</i> Bagnall, 1915	<i>Phaseolus lunatus</i> Linn. (Fabaceae)

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11. <i>Megalurothrips usitatus</i> (Bagnall, 1913)	<i>Pongamia pinnata</i> (L.) Pierre (Fabaceae)
12. <i>Microcephalothrips abdominalis</i> (Crawford, 1910)	<i>Spilanthes acmella</i> Murr. ; <i>Tridax procumbens</i> (Asteraceae)
13. <i>Mycterothrips nilgiriensis</i> (Ananthakrishnan, 1960)	<i>Melastoma</i> sp. (Melastomaceae) <i>Cassia</i> sp. (Caesalpinaceae).
14. <i>Projectothrips pruthi</i> Moulton, 1929	<i>Cycas</i> sp. (Cycadaceae)
15. <i>Taeniothrips major</i> Bagnall, 1916	<i>Jasminum multiflorum</i> Andr. (Oleaceae)
16. <i>Thrips apicatus</i> Priesner, 1934	<i>Acacia</i> sp. (Mimosaceae)
17. <i>Thrips coloratus</i> Schmutz, 1913	Grass inflorescence
18. <i>Thrips flavidulus</i> (Bagnall, 1923)	<i>Rosa alba</i> Linn. (Rosaceae)
19. <i>Thrips flavus</i> Schrank, 1776	<i>Solanum indicum</i> Linn. (Solanaceae) <i>Cyrtococcum aurescens</i> (Trin.) (Poaceae)
20. <i>Thrips orientalis</i> (Bagnall, 1915)	Wild Jasmine flowers

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**C. Gall thrips (Tubulifera:Phlaeothripidae)**

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Sl. <i>Thrips species</i>	<i>Host plant (Family)</i>
1. <i>Gynaikothrips affinis</i> Murale. & Sen, 1981	<i>Ficus</i> leaf gall (Moraceae)
2. <i>Gynaikothrips bengalensis</i> Ananth., 1973	<i>Ficus religiosa</i> leaf gall (Moraceae)
3. <i>Gynaikothrips cecedii</i> Ananth., 1973	<i>Ficus</i> leaf gall (Moraceae)
4. <i>Gynaikothrips uzeli</i> Zimmermann, 1900	<i>Ficus</i> leaf gall (Moraceae)
5. <i>Liophlaeothrips pavettae</i> Ananth. & Jagadish, 1969	<i>Pavetta</i> sp. (Rubiaceae) & <i>Quercus dealbata</i> (Hook & Thomas) (Fagaceae); <i>Sterculia villosa</i> Roxb. (Sterculiaceae)
6. <i>Liophlaeothrips succinctus</i> Ananth. & Jagadish, 1969	<i>Ficus cunia</i> B & H (Moraceae)
8. <i>Liothrips aberrans</i> Murale. & Sen, 1978	<i>Bixa orellana</i> Linn. (Bixaceae)
9. <i>Liothrips aequilus</i> Ananth. & Jagadish, 1969	<i>Eugenia jambolana</i> Lam. (Myrtaceae)
10. <i>Liothrips himalayanus</i> Ananth. & Jagadish, 1970	<i>Eugenia</i> sp. (Myrtaceae); <i>Ficus</i> sp.
11. <i>Liothrips litseae</i> Moulton, 1933	<i>Bixa orellana</i> Linn. (Bixaceae)
12. <i>Liothrips mobanrami</i> Bhatti, Varatharajan & Singh, 2006	<i>Bixa orellana</i> Linn. (Bixaceae)
13. <i>Liothrips morindae</i> Ananth. & Murale., 1974	<i>Sterculia villosa</i> Roxb. (Sterculiaceae)
15. <i>Mesothrips acutus</i> Murale. & Sen, 1981	<i>Ficus glomerata</i> Roxb. (Moraceae)
16. <i>Mesothrips ambasensis</i> Murale. & Sen, 1981	<i>Bixa orellana</i> Linn. (Bixaceae)
17. <i>Mesothrips extensinus</i> Ananth. & Jagadish, 1969	<i>Mallotus</i> sp. & <i>Ficus hispida</i> Linn. F. (Moraceae)
18. <i>Mesothrips jordani</i> Zim, 1990	<i>Ficus</i> gall
19. <i>Mesothrips latus</i> Murale. & Sen, 1981	<i>Quercus griffithi</i> (Fagaceae)
20. <i>Mesothrips perlucidus</i> Murale. & Sen, 1981	<i>Ficus virens</i> Ait. (Moraceae)
21. <i>Nagathrips crenulatus</i> (Varatharajan & O. T. Singh, 2000)	<i>Bixa orellana</i> Linn. (Bixaceae) <i>Mallotus</i> sp.
22. <i>Ocnothrips indicus</i> Ananth., 1969	<i>Piper</i> sp. (Piperaceae)

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**D. Leaf inhabiting thrips (Terebrantia: Thripidae)**

Sl.	Thrips species	Host plant (Family)
1.	<i>Craspedothrips minor</i> (Bagnall, 1921)	<i>Schima wallichii</i> (DC) Korth (Theaceae) & <i>Litsea monopetala</i> (Roxb.) (Lauraceae)
2.	<i>Helionothrips kadaliphilus</i> (Ramakrishna & Marg, 1931)	<i>Colocasia esculenta</i> (L.) Schott (Araceae) <i>Musa paradisiaca</i> L. (Musaceae)
3.	<i>Hydatothrips ananthakrishnani</i> Bhatti, 1973	<i>Quercus serrata</i> Thunb. (Fagaceae)
4.	<i>Hydatothrips ramaswamiabi</i> (Priesner, 1926)	Cucurbit leaf (Cucurbitaceae)
5.	<i>Organothrips indicus</i> Bhatti, 1974	<i>Eichbornia crassipes</i> (Mart.) Solms (Pontederiaceae)
6.	<i>Selenothrips rubrocinctus</i> (Giard, 1901)	<i>Quercus serrata</i> Thunb. (Fagaceae)
7.	<i>Zaniothrips ricini</i> Bhatti, 1967	<i>Ricinus communis</i> (Euphorbiaceae)
<b>Leaf inhabiting thrips</b>		<b>(Tubulifera: Phlaeothripidae)</b>
8.	<i>Araeothrips longisetis</i> Ananth., 1976	<i>Bambusa balcoon</i> Var. (Poaceae) <i>Castanopsis</i> sp. (Fagaceae)
9.	<i>Araeothrips vamana</i> Murale., 1982	<i>Quercus serrata</i> Thunb. (Fagaceae)
10.	<i>Athlibothrips inquilinus</i> (Ananth. & Varadarasan, 1978)	<i>Quercus serrata</i> Thunb. (Fagaceae), <i>Bixa orellana</i> Linn. (Bixaceae); <i>Kalanchoe rosea</i> Clarke (Crassulaceae)
11.	<i>Gigantothrips elegans</i> Zimmermann, 1900	<i>Quercus serrata</i> Thunb. (Fagaceae) <i>Ficus virens</i> Ait (Moraceae) <i>Sterculia villosa</i> Roxb. (Sterculiaceae)
12.	<i>Gigantothrips tibialis</i> Bagnall, 1921	<i>Ficus virens</i> Ait (Moraceae)
13.	<i>Gigantothrips seshadrii</i> (Ananth., 1964)	<i>Ficus plant</i>
14.	<i>Haplothrips longisetosus</i> Ananth. 1955	<i>Schoenoplectus lacustris</i> Rchb. (Palla) (Cyperaceae)
15.	<i>Haplothrips tenuipennis</i> Bagnall, 1918	<i>Mangifera indica</i> Linn. (Anacardiaceae)
16.	<i>Karnyothrips melaleucus</i> (Bagnall, 1911)	Bamboo leaf
17.	<i>Leeuwenia ananthakrishnani</i> Varatharajan & Sen, 2000	<i>Quercus serrata</i> Thunb. (Fagaceae) <i>Quercus griffithii</i> . (Fagaceae)
18.	<i>Leeuwenia maculans</i> Priesner & Seshadri, 1953	<i>Quercus serrata</i> Thunb. (Fagaceae)
19.	<i>Mycterothrips auratus</i> Wang, 1999	<i>Melia azedarach</i> L. (Meliaceae)
20.	<i>Mycterothrips ricini</i> (Shumsher, 1946)	<i>Ricinus communis</i> L. (Euphorbiaceae)
21.	<i>Praepodothrips priesneri</i> Ananth., 1955	<i>Bambusa balcoon</i> Var. (Poaceae)
22.	<i>Tblibothrips manipurensis</i> Muraleedharan, 1982	<i>Litsea monopetala</i> (Roxb.) (Meliaceae) <i>Ardisia</i> sp. (Myrsinaceae)

**E. Weed infesting thrips (Terebrantia: Thripidae)**

Sl.	Thrips species	Host plant (Family)
1.	<i>Dendrothrips stannardi</i> Ananthakrishnan, 1958	<i>Aloe vera</i> (L.) Burm. F. (Liliaceae)
2.	<i>Dendrothrips schimae</i> Kudo, 1989	<i>Polygonatum multiflorum</i> Allioni (Liliaceae)
3.	<i>Dendrothripoides innoxius</i> (Karny, 1914)	<i>Ipomoea cornea</i> (L.) Lam. (Convolvulaceae)
4.	<i>Thrips carthami</i> Shumsher, 1946	<i>Carthamus tinctorius</i> Linn (Asteraceae)
5.	<i>Thrips hawaiiensis</i> (Morgan, 1913)	<i>Lanatana camera</i> L. (Verbanaceae)
<b>Weed infesting thrips</b>		<b>(Tubulifera: Phlaeothripidae)</b>

6.	<i>Dolichothrips assimilis</i> Priesner & Seshadri, 1952	<i>Acacia</i> sp. & <i>Albizia lebbake</i> Benth (Mimosaceae)
7.	<i>Dolichothrips indicus</i> (Hood, 1919)	<i>Thespicia</i> sp. (Malvaceae)
8.	<i>Haplothrips andresi</i> Priesner, 1931	<i>Scirpus lacustris</i> L. (Cyperaceae)
9.	<i>Haplothrips ceylonicus</i> Schmutz, 1913	<i>Gardenia jasminoides</i> Ellis (Rubiaceae)
10.	<i>Haplothrips ganglbaueri</i> Schmutz, 1913	<i>Gardenia jasminoides</i> Ellis (Rubiaceae) <i>Jasminum multiflorum</i> Andr. (Oleaceae) <i>Bambusa</i> sp. (Poaceae)
11.	<i>Haplothrips gowdeyi</i> (Franklin, 1908)	<i>Blumea glomerata</i> (Asteraceae) <i>Mangifera indica</i> Linn. (Anacardiaceae) <i>Cosmos bipinnatus</i> Cav. (Asteraceae)

#### F. Thrips of pest category (Terebrantia: Thripidae)

Sl.	<i>Thrips species</i>	Host plant (Family)
1.	<i>Frankliniella schultzei</i> (Trybom, 1910)	<i>Helianthus annuus</i> ; groundnut flowers
2.	<i>Megalurothrips distalis</i> (Karny, 1913)	<i>Dolichos lablab</i> . (Fabaceae)
3.	<i>Megalurothrips peculiaris</i> (Bagnall, 1918)	<i>Phaseolus vulgaris</i> Linn. (Fabaceae)
4.	<i>Panchaetothrips indicus</i> Bagnall, 1912.	<i>Curcuma longa</i> Linn. (Zingiberaceae)
5.	<i>Retithrips syriacus</i> (Mayet, 1890)	<i>Ricinus communis</i> . Linn. & <i>Jatropha curcas</i> Linn. (Euphorbiaceae)
6.	<i>Rhipiphorothrips cruentatus</i> Hood, 1919	Leaves of the grape wine plant
7.	<i>Scirtothrips bispinosus</i> (Bagnall, 1924)	Tea leaves- <i>Camellia chinensis</i> (Theaceae)
8.	<i>Scirtothrips dorsalis</i> Hood, 1919	<i>Capsicum annum</i> Linn. (Solanaceae) <i>Camellia chinensis</i> (Theaceae)
9.	<i>Sciothrips cardamomi</i> (Ramakrishna, 1935)	<i>Eleteria cardamom</i> (Zingiberaceae)
10.	<i>Stenchaetothrips biformis</i> (Bagnall, 1913)	<i>Oryza sativa</i> Linn. (Poaceae)
11.	<i>Thrips palmi</i> Karny, 1925	<i>Litsea monopetala</i> (Roxb.) Peks. (Lauraceae) <i>Cucumis sativus</i> Linn. (Cucurbitaceae)
12.	<i>Thrips tabaci</i> Lindeman, 1889	Onion – <i>Allium cepa</i> L. (Amaryllidaceae)

region on the plant genus *Eugenia* (Myrtaceae) (Mound 2004).

Although a number of examples cited above reiterate the host specificity of thrips with the plants, field experience states that it is too difficult to pinpoint the plant host for majority of the thrips due to many reasons. Therefore, the plant from which the researcher collects the insect need not necessarily be its food plant. However, collection of a particular thrips species from the same host in many instances along with the immature stages and manifestation of certain symptoms or damage or infestation pattern, will definitely give a clue that it could be the plant host of thrips concerned. On the basis of which, a number of plant hosts have been

listed in the present study. Table 2 enumerates thrips species that are associated with specific plants or members of a plant family. Such alliance would be possible only when they establish intricate relation with plants. For instance, certain thysanopterans have common name like onion thrips, chilli thrips, rice thrips, grapes wine thrips, banana thrips, turmeric thrips, cardamom thrips, tea thrips, castor thrips etc, only due to their occurrence on the respected plant host (Ananthakrishnan, 1971). Similarly, the gall inducing species select invariably their own plant host for making gall and their intimate relation is so perfect that the shape of the gall appears to be unique for each thrips species. The details pertaining to these aspects are available in the book on “*Thrips and gall dynamics*” by Ananthakrishnan and Raman (1989).

**Table 2**  
Host specificity of certain thrips

Sl. No.	Name of the Thrips	Plant host
1.	<i>Dicromothrips nakabari</i>	<i>Dendrobium</i> sp.
2.	<i>Neohydatothrips samayunkur</i>	<i>Tagetes</i> sp.
3.	<i>Organothrips indicus</i>	<i>Eichbornia crassipes</i>
4.	<i>Panchaetothrips indicus</i>	<i>Curcuma longa</i>
5.	<i>Retithrips syriacus</i>	<i>Ricinus communis</i> .
6.	<i>Sciotthrips cardamomi</i>	<i>Eleteria cardamom</i>
7.	<i>Stenchaetothrips biformis</i>	<i>Oryza sativa</i>
8.	<i>Thrips orientalis</i>	<i>Jasminum multiflorum</i>
9.	<i>Thrips tabaci</i>	<i>Allium cepa</i>
10.	<i>Zaniotthrips ricini</i>	<i>Ricinus communis</i>

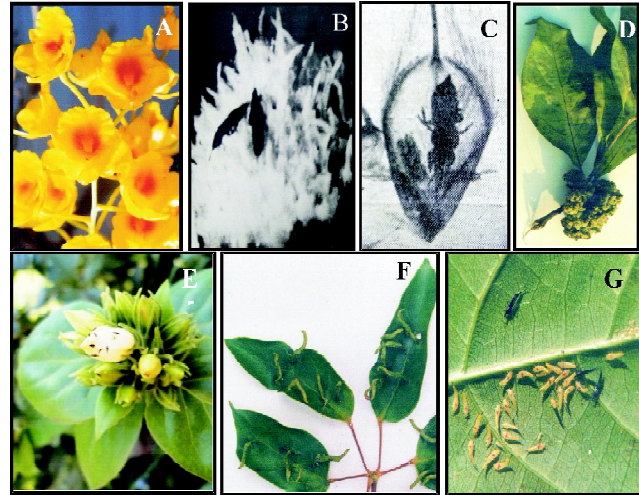
  

Sl. No.	Name of the Thrips	Plant family
1.	<i>Anaphothrips sudanensis</i>	Poaceae
2.	<i>Bamboosiella bicoloripes</i>	Poaceae (Bamboo)
3.	<i>Crotonothrips memecylonicus</i>	Melastomaceae
4.	<i>Gigantothrips seshadrii</i>	Moraceae
5.	<i>Gynaikothrips bengalensis</i>	Moraceae
6.	<i>Megalurothrips distalis</i>	Fabaceae
7.	<i>Microcephalothrips abdominalis</i>	Asteraceae
8.	<i>Leeuwenia ananthakrishnani</i>	Fagaceae
9.	<i>Scirtothrips bispinosus</i>	Theaceae
10.	<i>Urotthrips tarai</i>	Fagaceae

**Table 3**

**Relation between plant families and thrips species based on thrips collection from diverse host plants**

Sl. No	Plant family	Number of plant species	Number of Thrips species
1	Poaceae	13	11
2	Fagaceae	4	11
3	Moraceae	6	10
4	Asteraceae	6	6
5	Bixaceae	1	6
6	Fabaceae	5	6
7	Euphorbiaceae	1	4
8	Cyperaceae	3	3
9	Rubiaceae	3	3
10	Solanaceae	3	3



**Figure 1: Micro-niches of thrips**

A: *Dichromothrips* on Orchid flower; B: *Thrips* on *Ageratum conyzoides*; C: *Chirothrips* on floret of grass inflorescence; D: *Crotonothrips* within *Memecylon* gall E: *Thrips orientalis* on *Jasminum*; F: *Liothrips* on *Schefflera* horn gall; G. Colony of *Gigantothrips* on *Ficus* leaf.

While looking at the overall scenario, it appears true that there is certain level of host specificity and on the basis of the chemical ecology of thrips, they mediate host plant interactions for feeding, breeding and establishing their colony (Ananthakrishnan and Gopichandran, 1993). Therefore, the list of plant hosts provided here will throw light on related hosts of thrips besides giving certain details about thrips association with plants.

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**REFERENCES**

Ananthakrishnan TN. (1971). Thrips (Thysanoptera) in Agriculture, Horticulture & Forestry - Diagnosis, Bionomics & Control. *Journal of Scientific & Industrial Research*, **30**(3): 113-146.

Ananthakrishnan TN. (1984). Adaptive strategies in cecidogenous insects. In: *Biology of Gall Insects*. ed.

- Ananthkrishnan TN. New Delhi. Oxford & IBH Publishing Company, 1-9.
- Ananthkrishnan TN (1993) Bionomics of Thrips. *Annual Review of Entomology*, **38**: 71-91.
- Ananthkrishnan TN and Gopichandran, R. (1993). *Chemical Ecology in Thrips – Host Plant Interactions*. New Delhi. Oxford & IBH Publishing Company, 125pp.
- Ananthkrishnan TN and Raman A. (1989). *Thrips and Gall dynamics*. New Delhi. Oxford & IBH Publishing Company, 120pp.
- Ananthkrishnan, T.N. and Sen, S. (1980): *Taxonomy of Indian Thysanoptera*. Handbook Series No. 1, Zoological Survey of India, Kolkatta, 211pp.
- Dang, L. H., Mound, L. A. and Qiao, G. X. 2014. Conspectus of the Phlaeothripinae genera from China & Southeast Asia (Thysanoptera: Phlaeothripidae). *Zootaxa*, **3807** (1): 001–082.
- Mound LA (1997). Thysanoptera and Plant Galls: towards a research programme. Ed. Raman, A. *Ecology and Evolution of Plant – feeding insects in natural and man-made environments*. International Scientific Publications, New Delhi, Backhuys Publishers, Leiden, 11-24.
- Morris DC, Schwarz MP, Cooper SJB & Mound LA. (2002). Phylogenetics of Australian *Acacia* thrips: the evolution of behaviour and ecology. *Molecular Phylogenetics and Evolution* **25**, 278–292.
- Mound LA. (2004) .Australian Thysanoptera – biological diversity and a diversity of studies. *Australian Journal of Entomology* (2004) **43**, 248–257.
- Mound LA (2005).Thysanoptera: Diversity and Interactions. *Annual Review of Entomology*, 50: 247-269.
- Mound, L. A. and NG, Y. F. (2009): An illustrated key to the genera of Thripinae (Thysanoptera) from South East Asia. *Zootaxa* **2265**: 27-47.
- Mound LA & Terry I. (2001). Pollination of the central Australian cycad, *Macrozamia macdonnellii*, by a new species of basal clade thrips (Thysanoptera). *International Journal of Plant Sciences* **162**, 147– 154
- Palmer, J.M., Mound, L.A. and Heaume, J.du. (1989): *CIE Guides to insects of importance to man 2. Thysanoptera*, Ed. C.R. Betts. C.A.B. International Institute of Entomology, British Museum Natural History, London, 73pp.
- Sen, S., Pramanik, N.K. and Sengupta, C.K. (1988): Thysanoptera fauna of North Eastern India. *Records of Zoological Survey of India, Occasional paper* No. 100. 123pp.
- Thrips Wiki. 2014. Thrips Wiki—providing information on the world thrips. Accessed online at [http://thrips.info/wiki/Main\\_Page](http://thrips.info/wiki/Main_Page) Blackwell Mound
- Varatharajan, R. (2005) Faunistic Diversity of Thrips (Thysanoptera) of North Eastern India. Silver Jubilee Publication, Manipur University, 74pp