Journal of Entomology and Zoology Studies

Available online at www.entomoljournal.com

E-ISSN: 2320-7078
P-ISSN: 2349-6800
JEZS 2016; 4(5): 294-296

Received: 11-07-2016
Accepted: 12-08-2016

VS Nagrare
Central Institute for Cotton Research (CICR), P. B. No. 2, Shankar Nagar P. O., Nagpur- 440010, India

Bhausaheb Naikwadi
Central Institute for Cotton Research (CICR), P. B. No. 2, Shankar Nagar P. O., Nagpur- 440010, India

Correspondence
VS Nagrare
Central Institute for Cotton Research (CICR), P. B. No. 2, Shankar Nagar P. O., Nagpur- 440010, India

An outbreak of gall inducing thrips *Gynaikothrips uzeli* Zimmermann (Thysanoptera: Phlaeothripidae) on *Ficus benjamina* Linn. in central India

VS Nagrare and Bhausaheb Naikwadi

Abstract
An outbreak of gall inducing thrips *Gynaikothrips uzeli* Zimmermann (Thysanoptera: Phlaeothripidae) was observed on weeping fig, *Ficus benjamina* Linn. during March- April 2014. Average 16 adult thrips per gall was recorded. Leaf galls are induced by larvae and adults, which feed only on young leaves, causing leaves to fold and/or curl. Feeding by thrips permanently damages the newly developing leaves, causing cell hypertrophy and tissue hyperplasia resulting in completely mar the beauty of plants. Average 45% leaves/plant was found damaged with *Gynaikothrips uzeli*. Some associated insects- thrips *Gigantothrips* sp, anthocorid bug *Mantandoniola* sp., parasitoids belonging to Eulophidae family have also been recorded from *G. uzeli* population infesting *F. benjamina*. *G. uzeli* might have came along with planting material and now become major threat to the plants in central India. A close watch is needed to curb the rising invasion of *G. uzeli* on *F. benjamina.* This report assumes great importance as no reports have been dealt with the new geographic area of infestation by *G. uzeli*.

Keywords: Gall inducing thrips, *Gynaikothrips uzeli, Ficus benjamina,* outbreak, central India

1. Introduction

Ficus benjamina Linn. (Rosales: Moraceae) is an evergreen hardy flowering tree native to South and Southeast Asia, Australia and pacific, commonly known as Weeping fig. The tree grows up to 70 feet height and 60 to 70 feet spread. The plant species is distributed in India, China, Bhutan, Nepal, Pakistan, Taiwan, Myanmar; Thailand, Cambodia, Laos, Vietnam, Indonesia, Malaysia, Papua New Guinea, Philippines, Australia, Solomon Islands [3]. *Ficus benjamina* is cultivated in many parts of the world including American Samoa, Mariana Islands, Ecuador, Micronesia Pohnpei Islands, Fiji, French Polynesia Society Islands, Guam, Kiribati Tungaru Islands, Marshall Islands, New Caledonia, Palau, Papua New Guinea, Philippines, Tonga, United States, Australia, Cambodia, China, Indonesia, Malaysia, Singapore, Taiwan, Thailand, Vietnam [5].

Weeping fig bears shiny, dark green, ovate leaves and tan bark. It is one of the most popular ornamental trees in gardens, parks and along streets, houseplants in the world due to its tolerance to severe pruning. It can also be suitably used as a clipped hedge or screen or can be trained into topiary. Young trees are often grown in containers, appearing on patios, at entranceways, or indoors. Due to its elegant growth and tolerance to poor growing conditions, in tropical regions it is cultivated as an ornamental plant in the parks and other urban locations while in temperate area as a houseplant. In India it is used as decorative plant as a hedge or clipped screen in gardens and house premises besides potted plant.

The leaves, bark and fruits of *Ficus benjamina* contain various bioactive constituents like cinnamic acid, lactose, naringenin, quercetin, caffeic acid and stigmasterol. The plant is used as invertebrate food for lac insects in Malacca, Sri Lanka and the Philippines. The latex serves for the production of rubber. *F. benjamina* used widely for the treatment of certain skin disorders, hypotensive stomachic and anti-dysentery in several traditionally important medicines. Various parts of *Ficus benjamina* possess activities like antibacterial, hepatoprotective, antimicrobial, antitumor, antioxidant, antiviral, antimycobacterial, analgesic, antidiarrhoeal, etc. and also act as a anti- helminthic agent and insect repellent.

At several locations of Nagpur in central India, leaves of these trees were found folded along the central vein and thrips were found associated with these symptoms. The purpose of this work was to record for the first time species of thrips associated with galled leaves on *F. benjamina* in central India.

The present study was carried out at Central Institute for Cotton Research, Nagpur, India. The galled leaves were observed for the presence of invertebrates associated with gall formation and other predatory fauna present in the galls during March- April 2014. Normal and galled leaves were counted from four directions to assess the severity of infestation. Randomly selected 20 galls were opened by hand and number of adult thrips were counted from few plant. Specimens of thrips and other associated insects were collected in 70% alcohol and sent to Division of Entomology, Indian Agricultural Research Institute, New Delhi; National Bureau of Agriculturally Important Insects, Bangalore and Zoological Survey of India, Kolkata for their identification. Measurement of insect specimen was taken with the help of Analytical Stereo Binocular Microscope (Leica).

An outbreak of gall inducing thrips *Gynaikothrips uzeli* Zimmermann (Thysanoptera: Phlaeothripidae) was observed on weeping fig during March- April 2014 in Nagpur of central India (Latitude: N 21° 2' 15.4078", Longitude: E 79° 3' 25.6645"). Thrips attained pest status by attacking the young leaves which turn yellow and are folded up or rolled up from the edges into gall-like structures. Thrips number was in the range of 7-28 with an average 16 adult thrips per gall. Leaf galls are induced by larvae and adults, which feed only on young leaves, causing leaves to fold and/or curl. Average 45% leaves/plant was found damaged with *G. uzeli*. Feeding by thrips permanently damages the newly developing leaves, causing cell hypertrophy and tissue hyperplasia. Gall formation permanently disfigures leaves, resulting in completely mar the beauty of plants. *G. uzeli* disappeared during summer months May-June and rainy season July-August. *G. uzeli* are now widely distributed as *F. benjamina* are cultivated in almost all regions of the world [7]. *F. benjamina* is the only plant on which *G. uzeli* has been reported to reproduce successfully [4].

Adult thrips of *G. uzeli* are dark tan in colour measuring about 2.22 to 3mm in length. Borbon and Agostini [1] described *G. uzeli,* reported antennal segment III-VIII, tarsus, fore tibias and apical part of the middle and hind tibias yellow, forewings pale.

Some associated thrips measuring about 10.08mm in length have been identified as *Gigantothrips* sp. which are closely related to *Gynaikothrips*. Adult members of these genera are indistinguishable except for the longer intermediate antennal segments and body. An anthocorid predatory bug *Mantandoniola* sp. was found associated with *G. uzeli*. Thrips parasitoids belonging to Eulophidae family have also been recorded from the thrips population infesting *F. benjamina*.

G. uzeli is native to southern Asia and has been recorded from India, Algiers, Java, Madeira, Canary Islands, Cuba, Puerto Rico and Florida, Costa Rica, Brazil, Australia, Taiwan, Maldives, Singapore, USA, Mexico, Argentina. An outbreak of *G. uzeli* has caused severe damage to *F. benjamina* in Florida and several other southern states. Its dispersal world over can be attributed to the horticultural trade in *F. benjamina*.

Some recent reports indicated adults and larvae of thrips species *Androthrips ramachandrai* Karny (Phlaeothripidae) feeding on eggs, larvae and pupae of *G. uzeli* in *F. benjamina* galls in the Americas, from USA to Southern Brazil [2].

G. uzeli have been reported in Indian states Tamil Nadu, Odisha, West Bengal [6] on the *F. benjamina* however till date there are no records of any *Gynaikothrips* species inducing leaf galls on *F. benjamina* in central India. This species might have came along with planting material and now become major threat to the plant. This report assumes great importance as no reports have been dealt with the new geographic area of infestation. A close watch is needed to curb the rising invasion of *G. uzeli* on *F. benjamina*.

Normal plant *F. benjamina*

F. benjamina plant infested by *G. uzeli*

Leaf gall by *G. uzeli*

Colony of *G. uzeli* inside gall

Adult *G. uzeli*

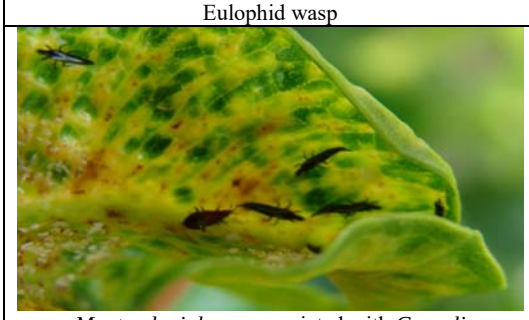
Eggs of *G uzeli*

Larvae of *G. uzeli*

Gigantothrips sp.

Eulophid wasp

Ceraphronid wasp



Montandoniola sp. associated with *G. uzeli*

Nymph *Montandoniola* sp.

Picturesque of *Ficus benjamina* infested by *Gynaikothrips uzeli* and associated insect fauna

2. Acknowledgements

The Authors duly acknowledged the help and cooperation received from Head Crop Protection Division and Director CICR, Nagpur. The authors also acknowledged the help received from Dr V. V. Ramamurthy, Professor Division of Entomology, Indian Agricultural Research Institute, New Delhi, Dr J. Poorani, National Bureau of Agriculturally Important Insects, Bangalore and Dr. Vikas Kumar, Centre for DNA Taxonomy Molecular Systematics Division, Zoological Survey of India, Kolkata, for identifying thrips and predatory bugs specimen under report.

3. References

1. Borbon M, Agostini JP. *Gynaikothrips uzeli* (Zimmermann) and *Androthrips ramachandrai* Karny (Thysanoptera, Phlaeothripidae), first records for Argentina. *Nota cientifica,* 2011; 43, 253-260.
2. Cavalleri A, Lima MGA, Melo FS, Mendoncajr MS. New records of thrips (Thysanoptera) species in Brazil. Neotropical Entomology, 2011; 40:628-630.
3. GRIN. Germplasm Resources Information Network (Online Database). National Germplasm Resources Laboratory, Beltsville, Maryland. URL: http://www.ars-grin.gov/ cgi-bin/npgs/html/ taxon.pl?16785 (Accessed on 04 August 2014).
4. Melo FS, Cavalleri A, Milton M. Predation of *Gynaikothrips uzeli* (Thysanoptera: Phlaeothripidae) by *Androthrips ramachandrai* (Thysanoptera: Phlaeothripidae). Florida Entomologist, 2013; 96:859-863.
5. PIER 2014. Pacific Island Ecosystems at Risk http://www.hear.org/ pier/ species/ ficus_benjamina.htm (Accessed on 11 August 2014)
6. Singh HC, Varatharajan R. Thrips (Insecta: Thysanoptera) fauna of Kaziranga National Park, Assam. Current Science, 2013; 105:1219-1223.
7. Thrips wiki. Thrips Wiki - Providing information on the World's thrips. http://thrips.info/ wiki/ Gynaikothrips uzeli 2014 (Accessed 11 August 2014).