



FARAMEA CYANEA MÜLL. ARG. (RUBIACEAE) AS A HOST PLACE FOR *FRANKLINIELLA* SP. (THRIPIDAE: THYSANOPTERA)

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INTRODUCTION

Thrips are small insects, with the adult body size ranging from about 0,5 mm to 15 mm (Mound & Marullo, 1996). They occupy a wide range of habitats, from tropical to temperate regions (Ananthakrishnan, 1993), and its diversity is related to local flora diversity and the range of niches it provides (Mound & Marullo, 1996). About 520 Thysanoptera species, in 139 genera and six families, are known from Brazil, of which one-third are grouped in the suborder Terebrantia and two-thirds in the Tubulifera, constituting about 10% of the known world fauna (Monteiro, 2002).

Thrips can be found among all kinds of growing vegetation, like flowers, branches and leaf litter, (Pinent *et al.*, 2006). When associated with flowers, thrips can use them as shelter or food resource, and they sometimes can also act as pollinators (Ananthakrishnan, 1993).

In order to understand thrips biology, it is important to distinguish the "finding places" of a species and its "host plants" (Mound & Marullo, 1996). The recognition of this latter requires concomitant collecting of different instars of thrips together with identification of the larval stages, but unfortunately, published host records for Thysanoptera are commonly unreliable, with many host records based on winged adults that could have dispersed from their breeding site (Mound, 2005).

Few inventories of thrips and its host plants have been conducted in Brazil (Pinent *et al.*, 2005), but they show a great diversity of plants used by thrips. The diversity recorded so far is undoubtedly not representative because of the lack of sampling in extensive areas of our country and the diversity of our flora and plant formations (Monteiro, 2002).

The aim of this study was to evaluate the presence of thrips in *Faramea cyanea* (Rubiaceae), a common tree species in forest physiognomies of the Cerrado region. Preliminary observations proved thrips

occurrence in these flowers and further studies were necessary to establish *Faramea cyanea* as a host place or a finding place for the species of thrips.

MATERIAL AND METHODS

Faramea cyanea presents white, tubular, actinomorphic flowers, generally tetramerous and with sweet scent. Its inflorescences are located at the apical portions of the branches and are visited mainly by bees. Its corolla tubes presents 1.05±0.15cm of length, 0.24±0.20cm of maximum diameter and 0.14± 0.20cm minimum diameter (n=100). After anthesis *Faramea cyanea* flowers last only one day at the branches and afterwards the corolla fall to the ground.

Plant material was collected in October of 2006 in the Panga Ecological Station (19°09' - 19°11' SE 48°23' - 48°24' W; 800 m) located near the city of Uberlndia-MG, during *Faramea cyanea* flowering period. The PES consists of approximately 400 ha which encloses some forest plant physiognomies of Cerrado, as the Gallery Forest where the fieldwork was carried out.

We collected 10 buds, 10 fresh flowers and 10 recently fallen flowers in 20 individuals of *Faramea cyanea*, totalizing 600 flowers. They were collected in three categories in order to verify preferential habitat for thrips. We also observed thrips in the field to study their behaviors on the flowers.

Microscopy slides were prepared in order to identify thrips species found in *Faramea cyanea*, in accordance with Mound & Marullo (1996).

D'Agostinho-Pearson test (for k-samples) was used to verify the normality among the samples. As the data did not show normal distribution Kruskal-Wallis test was used to search possible differences between the samples. Then Dunn test was used to verify which categories really presented differences.

RESULTS AND DISCUSSION

Four morphospecies of Thysanoptera were found in *Faramea cyanea* flowers, and only one presented considerable numbers of individuals (n=475). So it is reasonable to suppose that, in this case the presence of the other morphospecies individuals (<5, each morph) was occasional (dispersal, sampling) (Pinent et al., 2006). The morphospecies with most individuals was classified as *Frankliniella* sp. (Thripidae) in agreement with Mound & Marullo (1996). The specific identification of *Frankliniella* sp. was not possible because Thysanoptera's taxonomy keys focus mainly in species with economical importance and so there is a lack of knowledge of the Thysanopterofauna in Brazil (Pinent et al., 2005). The recognition of *Frankliniella* species is particularly difficult, because the taxonomic characteristics may present intermediate variations among individuals of the same species (Mound & Marullo, 1996).

The observed individuals were found mainly in the fresh flowers (59.2%; n=281) followed by the fallen flowers (38.7%; n=184) and the buds (2.1%; n=10). Larvae and female adults had the largest frequencies (427 and 31 respectively). Larvae were found together with adults, inside the corolla. Pupa and pre pupa were not found.

Kruskal-Wallis test showed that number of thrips for each categories present significant difference (H=67.573, p<0.0001), and the Dunn test showed that the difference was between all the categories (z=5.043, p<0.05 between fallen flowers and buds; z=3.085, p<0.05 between fallen flowers and fresh flowers; z=8.129, p<0,05 between fresh flowers and buds) suggesting preference for fresh flowers. The species of *Frankliniella* are generally found on flowers (Mound & Marullo, 1996).

Frankliniella sp. presented high mobility, since some individuals were observed entering and leaving the interior of the corolla. This situation was observed more frequently when the flowers were in the ground. In this case, thrips generally abandoned the flowers and went to the litter fall.

The small number of thrips found in the buds suggests a low preference for these insects. The largest density of larval individuals in the fresh flowers, suggests that the oviposition may occur in the buds or near this place. However, since the flowers lasts just one day, there is not enough time for the development to the subsequent stages. That could explain why neither thrips pupa nor pre pupa were found in the collected flowers. Probably when they fall with the flowers, the mobile larvae go to

the ground or leaf litter where they complete their development. In temperate climates, pupas of the species that occur in flowers of short duration that fall, can hibernate and complete their metamorphosis on the ground (Ananthakrishnan, 1993; Mound & Marullo, 1996). A similar situation may happen to *Frankliniella* sp. It is possible that after become winged adults, thrips return to the plant and colonize other flowers.

Flowers of *Faramea cyanea*, did not present ideal conditions to shelter thrips, since its floral characteristics attracts a wide range of visitors beside thrips. This kind of flowers does not make a good place for their occurrence, or even their reproduction (Mound, 2005). These flowers, however, constitute an important resource for *Frankliniella* sp, since some individuals were found in mate behavior (copulating) when collected, which together with the occurrence of larvae in the flowers, characterize *Faramea cyanea* as a reproductive resource.

The possibility that thrips are acting as pollinators of *Faramea cyanea* cannot be discarded, although pollination is mainly by bees. Besides thrips, small numbers of Staphylinidae (Coleoptera) were collected in the flowers. The concomitant occurrence of thrips and Staphylinidae in the flowers can suggest possible ecological interactions (Alves-Silva & Del-Claro unpublished data).

The relation of thrips and *Faramea cyanea* denotes a thrips reproductive behavior coincident with the flowering period of the plant that happens at the beginning of the rainy season. Nevertheless the maintenance of these insects in the other season of the year remains unknown and it is possible that thrips occupies others microhabitats and plant physiognomies.

This study suggests *Faramea cyanea* as a host plant for *Frankliniella* sp., although more studies are necessary to establish the ecological relations and interactions of these thrips with these plant species and their associated fauna.

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