



Lonchaeidae species (*Dasiops curubae*, *Dasiops brevicornis*) attack the ovary flower buds of *Passiflora ligularis* Juss, in Banos, Ecuador

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ABSTRACT

Sweet Granadilla (*Passiflora ligularis*) is a crop of great importance for Ecuador because it has agro export prospects in countries like Colombia have conducted research to learn pests affecting it; in Ecuador they have not executed these activities why there are no records of the pest that most commonly attack plants of *Passiflora*. This study aimed to determine the severity of the Lonchaeidae species attack this crop, and identify the causative agent. The present study was carried out in the province of Tungurahua, Baños canton, parish Illuchi. 15 plants were selected on five sites, 4 reviews spaced 30 days, in each sample, 50 flowers/plants/site were considered. In order to obtain adult specimens, adequate samples were collected from the field, and maintained in the laboratory condition for the identification of imagos. Totally 9766 samples were collected and evaluated, out of which 20.51% are flowering botton affected by plague and 39.76 % of the flowers were destroyed by the *Dasiops* larvae attack the ovary of flower bud. *Dasiops curubae* and *Dasiops brevicornis* are new record of parasite species for Ecuador and *Passiflora ligularis* is also a new record of host species.

Key words: Sweet Granadilla, Flower bud, *Dasiops curubae*, *Dasiops brevicornis*, Illuchi

INTRODUCTION

Sweet granadilla (*Passiflora ligularis*) is a plant that belongs to the Passifloraceae family, is one of the most important species grown in tropical America. It is distributed from northern Argentina to Mexico, used for fresh consumption and processed [1]. The fruit grows in small areas with wide distribution in the Ecuadorian inter-Andean region, is present both in the valleys and foothills of mountains, has agricultural importance as a promising export crop. Sweet granadilla fruit exports declined considerably between 1998 and 2000 to a level of 87.7 percent. In contrast, after October 2000 there ws a significant growth and the export reached to about 100,000 kilos [2]. So far not much work has been done in Ecuador specially on phytosanitary problems which affects the crop. The Lonchaeidae family is a group of insect pests commonly attack the buds of different fruits [3,4,5,6,7]. Black fruit

flies (*Dasiops* spp.) are responsible for the fall of flower buds and fruit damage in growing Sweet Granadilla Juss [8].

The larvae of different species of *Dasiops* attack the *Passiflora* and cause damage to the flower and/or buttons fruits of these host plants. The button flowers often fall during the rainy season, and the larvae are small, cream in color, feeding on buds and flowers causing its fall [10].

In the present investigation, we would like to determine the causal agent for the fall of passion flower, and to assess the damage that this caused. The problem occurs in the flower bud where the larvae begins to feed the fluid and immature anthers, then break and topple the floral button and the larvae exit to pupate in the soil, amid the litter. The attack is more severe in the medium sized flower buds, when they reach between 1 and 3 cm long, considering that the button can grow up to 5 cm. This attack comes, on average, with 20 days old flower bud and the life cycle is about one month [11].

In Colombia, *Dasiops* sp. is responsible for the fall of flower and fruit buttons cultivating *Passiflora ligularis* Juss [7]. Menezes Aguiar et al. [8] have reported that the members of the family Lonchaeidae attacks commonly the fruit buds of different species. Norrbom and McAlpine [9] indicated that larvae of different species of *Dasiops* develop in species of *Passiflora* and causes damage to flower buds and/or fruits.

EXPERIMENTAL SECTION

The studies were carried out at five different sites and altitudes (2300, 2290, 2250, 2168 and 2144 meters) of the Illuchi Parish, Baños Canton, Tungurahua Province, and sampled at each site to determine the incidence and severity of attack. Samples of affected flowers were taken to the laboratory of entomology ESPE, Agricultural Engineering faculty to obtain adults for the purpose of identification. The incidence and severity of insect attack was carried out and evaluated in the field by taking fifteen plants per site.

The affected flowers were considered based on the presences of larva, presence of a small spot of light brown color at the site of oviposition and enlarged dark brown spot, withered calyx and colour change from black-brown pigmentation of approximately 1mm in size, finally full flower bud rot, which breaks off and falls to the ground.

To determine the growth stage in which the attack is launched, flower samples were taken button states, cartridge and open flower, were taken to the laboratory and were placed in individual containers and subjected to direct observation.

RESULTS AND DISCUSSION

The two species identified are Diptera: Lonchaeidae; *Dasiops curubae* by Steykal 1980 (majority population) and *Dasiops brevicornis* by 1896 (one specimen, male). The two species are new records for Ecuador and *Passiflora ligularis* Juss, is also a new record of host plant. In order to determine the starting of the attack, we have dissected the different stages of button and confirmed that the attack starts during the beginning of early stage of button.

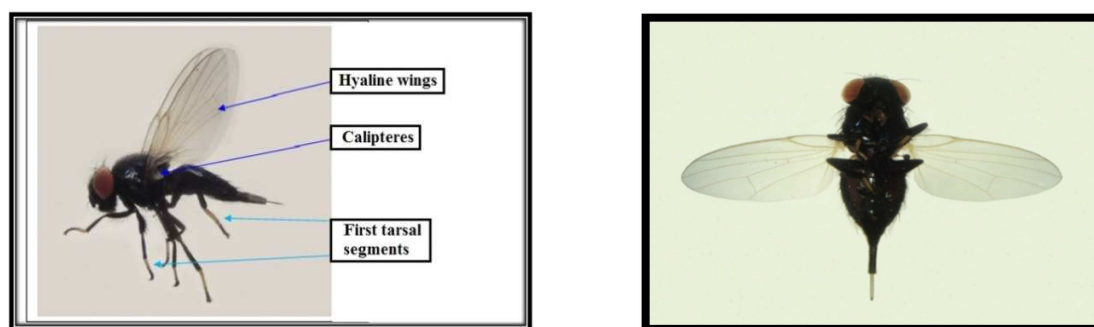


Figure 1: *Dasiops curubae*, Male adult insect and Female adult insect

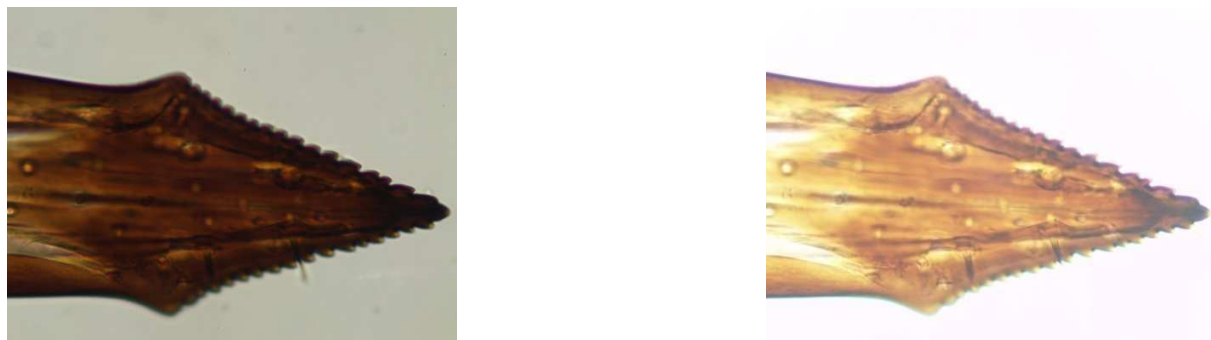


Figure 2: *Dasiops curubae* and Maleaculeo

To assess the damage in the field a total of 9766 flowers were collected and analyzed for phonological button attack incidence average of 43.55% for all the five sites. The percentage of attack on the growth stage is 41.08% in cartridge stage and 9.63% for open flower growth stage and 100% attacked flowers inevitably dies. The following figure shows the incidence rate for the five sites evaluated is observed. In the evaluation of losses it was determined that 39.76% of the total fruit production is declined by the ovary worm attack.

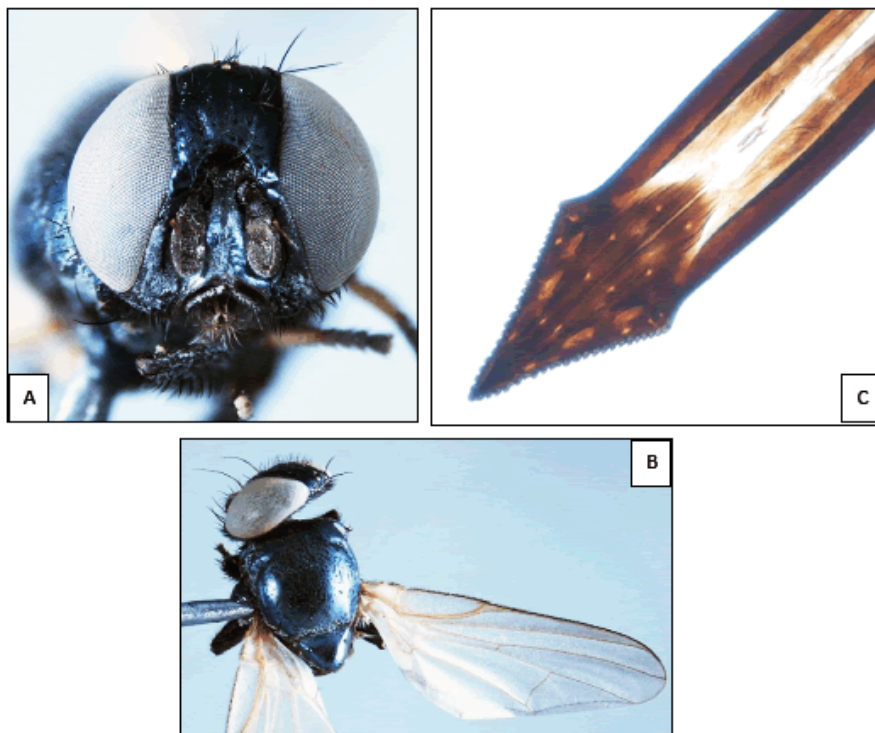


Figure 3: *Dasiops brevicornis* Male adult insect, a. Front view of the head, b. Dorsal view of the torax and wings. c. Apical portion of aculeus. Taken from: Angela Castro Avila and CheslavoKorytkowski

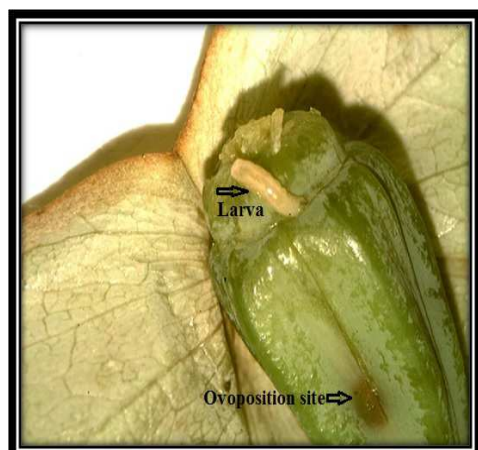


Figure 4: Flower buds affected by the larva

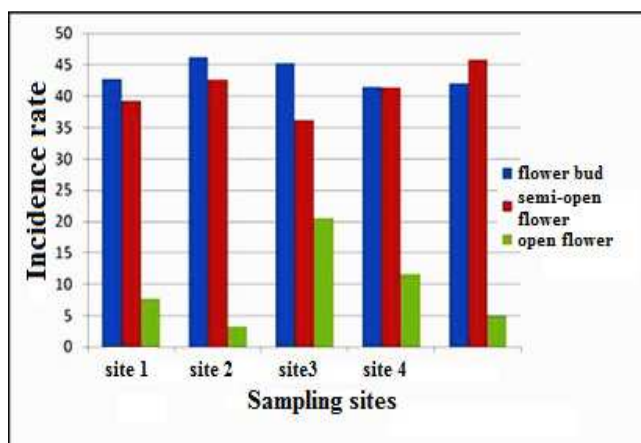


Figure 5: Incidence rate of damage caused by insect larva

CONCLUSION

Dasiops curubae and *Dasiops brevicornis* are the causative agents of attack on the ovary flower buds *Passiflora ligularis* Juss. The most common and abundant species in the samplings *Dasiops curubae* (98.18 %) and less frequent and abundant is *Dasiops brevicornis* (1.82 %). *Dasiops curubae* and *Dasiops brevicornis*, are new records for *Passiflora ligularis* Juss for Ecuador. Economically flowers losses (39.76%) and therefore the fruits of *Passiflora ligularis* Juss in Illuchi, Baños are significantly higher.

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