NOTA PRÉVIA

FIRST REPORT ON THE LEAFMINER FLY *Lyriomiza trifolii* (Diptera: Agromizydae) ATTACKING COFFEE PLANTATIONS

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ABSTRACT: *Liriomyza trifolii* has become a serious pest for numerous crops. This is the first report of *L. trifolii* attacking coffee plants. Thus, the objective of this study is to record the occurence of this insect in Municipality of Alto Paranaíba, State of Minas Gerais, Brazil. Coffee leaves with mines of *L. trifolii* were reported in five states (MG, SP, ES, BA and PE). The population peaks occur after a period of low rainfall 11.5 mm/month and 7.11 mm/month. This pest has not been reported.

Index terms: *Coffea* spp., desfoliation, phytophagous.

PRIMEIRO REGISTRO DA MOSCA MINADORA *Lyriomiza trifolii* (Diptera: Agromizydae) ATACANDO CAFEEIROS NO BRASIL

RESUMO: *Liriomyza trifolii tornou-se uma séria praga em várias culturas. Este é o primeiro relato de L. trifolii, em plantas de café. Objetivou-se, no presente trabalho, relatar a ocorrência de L. trifolii no Alto Paranaíba-Minas Gerais, onde ainda não havia sido registrada. Reportaram-se folhas de café com lesões de L. trifolii, em cinco estados (MG, SP, ES, BA e PE). Os picos populacionais ocorrem depois de um período de poucas chuvas 5,11 mm/mês e 7,11 mm/mês. Essa praga não havia sido registrada.*

Termos para indexação: *Coffea* spp*., desfolha, fitófago.*

Coffee crops hold great socio-economic importance in Brazil, what is the largest coffee producer in the world. The crops from 2014/2015 are expected to produce 48.34 million processed bags, where 75.09% are estimated to come from the *Coffea arabica L.* and the rest from *C. canefora* Pierre ex A. Froehner (COMPANHIA NACIONAL DE ABASTECIMENTO - CONAB, 2014). Among the factors that cause losses in quality and productivity of Brazilian coffee plants, pests are extremely important because they reduce the productive life of the coffee plant causing its death (REIS; SOUZA; ZACARIAS, 2006).

Thus, if insect-pest control and crop management are not brought about in a measured manner, grave consequences such as the development of new pests attacking crops could be the result. Another factor that contributes to the development of new pests is the migration of pests through the transportation of contaminants.

Lately, reports have shown new insect pests feeding and causing problems to coffee plants and other crops (FERNANDES et al., 2010; KASHIWAGI et al., 2005; SÁNCHEZ-SOTO et al., 2005; SOUZA et al., 2009). Recent research has documented the existence of *Naupactus curtus* (Coleoptera: Curculionidae) in São Paulo, Bahia, Paraná and in Santa Catarina, feeding of coffee leaves (*C. arabica* L.), acerola (*Malpighia glabra* L.), mulberry (*Morus alba* L.) and citrus (*Citrus sinensis* L.). Some insects that were not considered pests before and were confined to small areas in Brazil are important pests today, creating a considerable threat to the country's agricultural industry. The fact that these insects spread from a confined region to a widely distributed one over time, can be attributed to their power of dispersal (PEDIGO; RICE, 2006).

The damage caused by the larvae consists of meandering tunnels between the upper and lower epidermis of the leaves, producing large blotches that can penetrate the conductor veins. When this occurs, the population of this pest rises, causing a significant reduction in photosynthetic area through wilting and premature leaf dropping. The adults feed on the leaf's excretions coming from the puncture wounds created by the females' ovipositor (PARRELLA, 1987).

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Liriomyza trifolii has become a serious pest to many crops (ARAÚJO et al., 2013; MUSUNDIRE et al., 2012). These authors tell us that there are more than 25 distinct botanical families that act as hosts to the *L. trifolii* throughout the world. Thus, this study aims to convey the existence of the *L. trifolii* in the Brazil, where the species had not yet been documented.

The plots were established in five coffee fields from Minas Gerais (MG), Espírito Santo (ES), Pernambuco (PE), São Paulo (SP) and Bahia (BA) States, Brazil (Table 1).

These fields are all in the different region and follow the same cultivation practices, but exhibited varying levels of infestation. The coffee plants were five to eight years old, from the *C. arabica* cultivar "Catuaí Vermelho" (MG, PE and SP) and *C. canephora* EMCAPER 8151 (ES and BA) and were planted in the field at a spacing of 0.5 m x 1.5 m.

The seasonality occurrence of *L. trifolii* was carried out 2012 in a *C. arabica* plantation cultivated in the county of Rio Paranaíba, Minas Gerais State, Brazil. In order to evaluate the leafminer population density, the number of active mines was determined on the fourth pair of leaves in a group of ten plants/ha (Total area 5 ha). For the study of interactions among the environmental variable, pluvial precipitation with the mine density of *L. trifolii*, was calculated mean and standard error. Showed leaves with wounds from the *L. trifolii* in the median part of the plant, with the same characteristics as the *L. trifolii*. The wounds were heading from the edges inward to the center of the leaves and were snake-like in form (Figure 1A).

Leaves mined by *L. trifolii* were collected from field plants of *C. arabica* and *C. canephora*. The collected leaves were placed in "Gerbox" boxes following Reis Júnior et al. (2000). The pupae were collected and transferred to glass vials until adult emergence. The adults were identified how *L. trifolii.*

TABLE 1 - Sampling sites and mean of the leafminer fly *Lyriomiza trifolii* (Diptera: Agromizydae) in coffee plantations.

State	City	Coordinates[1]	Canopy	Leaves pair	Mines ($\bar{X}$ ±SE)
MG	Jaboticatubas	19º 30' S 43 45' W	Median	4th	2.02±0.18
	Rio Paranaíba	19º21' S46,14' W	Apical	3st	1.94±0.00
	Carmo do Paranaíba	19º 04' S 46º 22' W	Median	2nd	0.36±0.04
	Guaraciaba	20º 34' S 43º 00' W	Median	4th	1.27±0.00
	Lavras	21º 14' S 45º 12' W	Median	4th	0.21±0.12
ES	Santa Teresa	19º 93' S 40º 59' W	Median	6th	0.20±0.01
PE	Guaranhuns	08º 89' S 36º 49' W	Median	3st	0.26±0.01
SP	Franca	20º 58' S 47º 43' W	Basal	3st	1.01±0.02
	Ribeirão Preto	21º 10' S 47º 46' W	Basal	4th	3.11±0.19
BA	Barreiras	11º 21' S 44º 03' W	Median	4th	3.91±0.11
	Luiz Eduardo Magalhães	12º 32' S 45º11' W	Median	5th	5.01±0.10

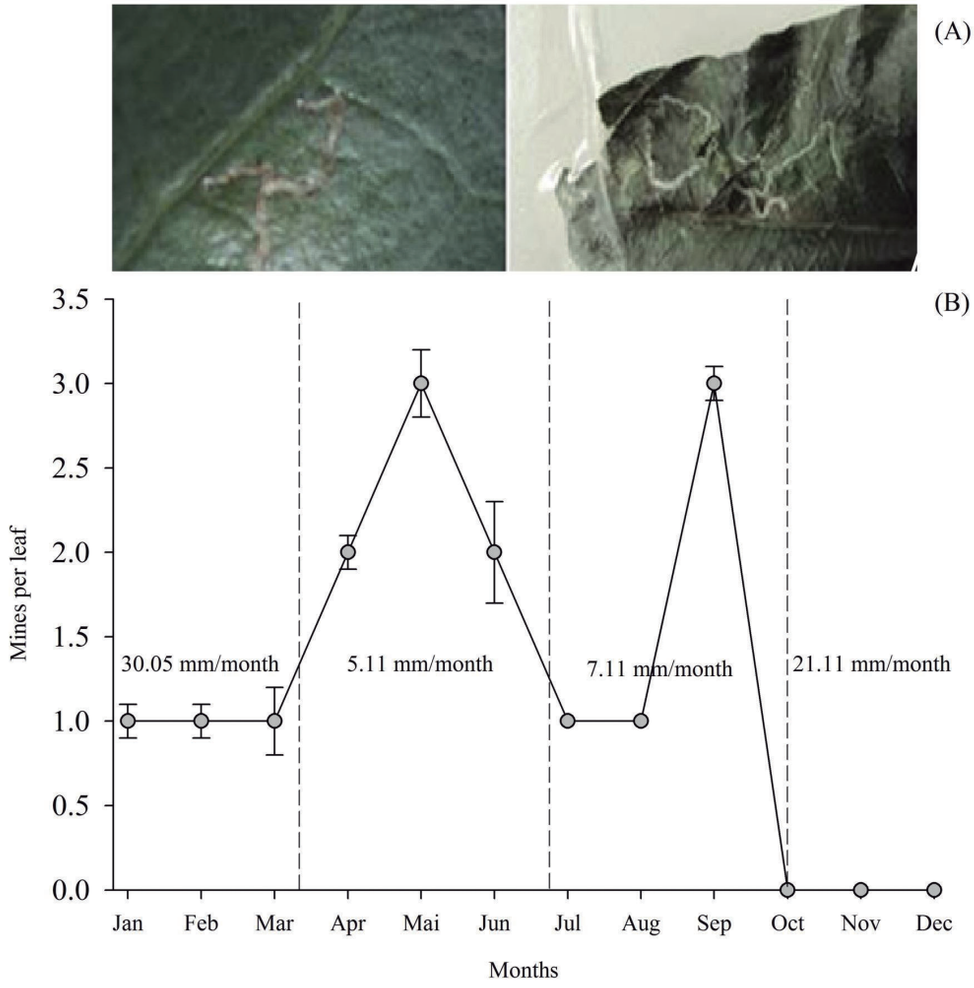

FIGURE 1 - Snake-like form of leafminer fly *Lyriomiza trifolii* in leaf of *Coffea arabica* (A) and Seasonal population fluctuation (B) of mines at Rio Paranaíba, MG. Pluviometric precipitation (mm/month) are located between dashed line.

L. trifolii found in median, apical and basal canopy coffee leaves the states of Minas Gerais, Espírito Santo, São Paulo, Bahia and Pernambuco, in densities ranging from 0.20 to 5.01 mines/plant. Luiz Eduardo Magalhães - BA was the city with the highest density (Table 1). This higher fit in this region is likely to be due to irrigation and during higher temperatures areas, since this pest is highly dependent on temperature. The effect of temperature on the growth of *L. trifolii* been studied in some host plants (KANG et al., 2009; LI et al., 2012).

Already the population fluctuations in Rio Paranaíba, it was observed that in May and October occurred population peaks. Probably due to the large number of plantations of soy, onion and potato, where these pests can migrate to these crops (PARRELA, 1987). The population peaks occur after a period of low rainfall 5.11 mm/month and 7.11 mm/month (Figure 1B).

The problem with the leafminer fly has become more constant in the last few years, in various regions and among a wide range of crops, in Brazil. We believe this occurrence is due to their short life cycle, high mobility rate, exceptional reproductive capabilities, the fact that the eggs and larvae are protected in the inner parts of the leaf, the low efficiency rate of their natural enemies within the plantations, and the overuse of insecticides.

Although this study is the first report of the *L. trifolii* on the coffee leaf, the larvae feeding habits and the coffee plant losses are still unknown. Studies on the life cycle, the potential

of natural enemies, and the careful documentation of damages caused by the larvae of this species, as well as the period of its occurrence in coffee plantations in other geographical regions, are important factors in determining whether future measures of control are necessary or not.

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