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Short communication

First record of *Ectomyelois muriscis* (Lepidoptera: Pyralidae) on physic nut (*Jatropha curcas*), a biofuel plant

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ARTICLE INFO

Article history:
Received 9 September 2014
Received in revised form
13 February 2015
Accepted 14 February 2015
Available online 6 March 2015

Keywords:
Jatropha curcas
Ectomyelois muriscis
Host plant
Biodiesel
Chiapas

ABSTRACT

The natural infestation of fruits and stems of *Jatropha curcas* L. (Euphorbiaceae) by larvae of the pyralid moth *Ectomyelois muriscis* (Dyar) (Lepidoptera: Pyralidae) is reported for the first time. Populations of *E. muriscis* on *J. curcas* were observed in various parts of the state of Chiapas, southern Mexico. Feeding damage by larvae resulted in the destruction of *J. curcas* seeds. We conclude that this insect is a potential pest of *J. curcas* cultivation in this region.

1. Introduction

Jatropha curcas L. (Euphorbiaceae) is a tropical and perennial multipurpose plant, native to America, that is cultivated in many countries of the world to produce biodiesel from oil extracted from its seeds. This plant is commonly known as "physic nut" (English), pinhão-manso (Portuguese) and "piñón" or "tempate" (Spanish). Its cultivation has been promoted in areas where food production is not possible because soils are poor and water is scarce [1,2].

Jatropha curcas is widely distributed in Mexico where toxic and non-toxic genotypes of this plant occur naturally [3]. Due

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http://dx.doi.org/10.1016/j.biombioe.2015.02.018
0961-9534/

to the high genetic diversity of *J. curcas* in Mexico, especially in the state of Chiapas located in the southeast of the country, Mexico has been considered the likely center of origin for this species [4,5]. In Chiapas, *J. curcas* is commonly used as a living fence to control grazing and to mark field boundaries. This plant is also known for its medicinal properties [6]. In 2007–2008, *J. curcas* was introduced as a smallholder crop in various states of Mexico to provide biodiesel as an alternative and renewable source of energy [3,7–9]. Because *J. curcas* is not a domesticated plant in Mexico, for planting purposes several tonnes of seed were imported from India by the government of Chiapas. Almost all areas planted with *J. curcas* were established in central Chiapas and two processing plants were constructed for biodiesel production close to Tuxtla Gutierrez and Tapachula [9], the largest cities in this state.

Recently, the Mexican government started a national research project to develop novel varieties, management practices and production systems for *J. curcas* in different regions of the country [7]. As part of the national project, we conducted a survey to determine arthropods associated with *J. curcas* in several states of Mexico in order to identify potential pests, natural enemies and pollinators of this plant [10]. Despite its alleged resistance to herbivores, several phytophagous arthropods were identified as potential pests of this plant in Mexico. According to a review of literature, 78 arthropod herbivores were identified that feed on *J. curcas* across the globe, most of them (34 species) within the native range of the plant in Central and South America [11]. One of the identified hervibore arthropods in Mexico was the pyralid *Ectomyelois muriscis* (Dyar) (Lepidoptera: Pyralidae). This is the first time that *E. muriscis* has been reported feeding on *J. curcas*. In the present study we report aspects of the feeding behavior, biology and geographical distribution of *E. muriscis* populations feeding on *J. curcas* in Chiapas State, Mexico.

2. Materials and methods

In July 2011 green fruits of *J. curcas* were observed to have been perforated with 1–3 holes (2 mm diameter) in their pulp (Fig. 1). In order to determine the cause of such damage, 50 perforated and 50 non-perforated green fruits of *J. curcas* were collected in field in several locations of Frailesca, Isthmus-Coast and Soconusco regions of Chiapas, Mexico. The fruits were placed separately in containers in the laboratory and samples of perforated and non-perforated fruits were dissected. Several white or yellowish lepidopteran larvae (Fig. 2) were observed inside non-perforated fruits. Because the perforated fruits did not contained larvae, it was assumed that the observed holes in field were exit holes of the larvae. Field observations revealed that emerged larvae perforate the stems of *J. curcas* after they abandon the fruits. Thus, a sample of 15 perforate stems was collected from field sites and each was placed individually in containers to await the emergence of the adult stage of the insect. In June 2012 a group of infested fruits and stems was marked in 56 plants of *J. curcas* used as a living fence in Soconusco region, and a sample was taken at weekly intervals and dissected in the laboratory to determine the development of the insect under field conditions.

Fig. 1 – Green fruits of *J. curcas* perforated by larvae of *E. muriscis*. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

Fig. 2 – Larva stage of *E. muriscis* inside a seed of *J. curcas*.

3. Results and discussion

The moths that emerged from infested stems of *J. curcas* (three females, one male) were identified as *E. muriscis* (Fig. 3).

Fig. 3 – Adult stage of *E. muriscis*.