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The Currant Clearwing Moth *Synanthedon tipuliformis* (Clerck, 1759) as a New Pest for Pawpaw (*Asimina triloba* L.) in Slovakia – Short Communication

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Abstract

Kollár J., Bakay L. (2015): **The Currant Clearwing moth** *Synanthedon tipuliformis* (Clerck, 1759) **as a new pest for pawpaw** (*Asimina triloba* L.) **in Slovakia – short communication**. Plant Protect. Sci., 51: 153–155.

At the locality Čebovce we found damage on *Asimina triloba* cv. Prima and *Corylus avellana*, which is not a typical host plant. 20% of branches on the host plant Asimina triloba cv. Prima were damaged by the Currant Clearwing moth larvae. The leaves on the infested branches started to wilt in mid-August.

Keywords: Sesiidae; insect pests; fruit production; Čebovce

The Currant Clearwing moth *Synanthedon tipuliformis* (Clerck, 1759) is a serious pest of both red and black currant. It is widely dispersed in Eurasia, where it is considered the key pest on Ribes crops (Grassi *et al*. 2002). It is called "currant borer" and it is now a cosmopolitan species in temperate regions of the world where its host-plants have been introduced from Europe (Duckoworth & Eichlin 1974). It is autochthonous in West Palearctic region and from Europe it was introduced into many parts of the world. It occurs throughout Europe except Portugal and the Mediterranean Islands (Laštůvka & Laštůvka 2001). Currant Clearwing moth has been present also in New Zealand since at least 1868 (Fereday 1869). It spread also to China (Heilongjiang) and North America (Jin *et al*. 2008). Except currants, the Currant Clearwing moth larvae can damage gooseberry (*Ribes uva-crispa* L.) and the common spindle (*Euonymus europaea* L.) (Hluchý *et al*. 1997; Mazüraitis *et al*. 2006; Laštůvka 2010). It occurs both in lowlands and uplands (Laštůvka 2010). A higher risk of infestation is in currant plantations with low maintenance (Lánský *et al*. 2005), but also in maintained plantations with mechanically damaged plants, for example females of the Currant Clearwing moth are attracted by damaged (broken) shoots (Šefrová 2006).

Feeding and tunnelling by larvae causes a depletion of the plant food reserves, weakening and breakage of shoots, shoot dieback, and uneven bud break in the damaged sections of canes (Grassi *et al*. 2002). The Currant Clearwing moth can cause serious damage in plantations, when its presence is underestimated and no pest control is carried out. The Currant Clearwing moth has only one generation annually. The moth flies from May to August. Females lay one egg on the bark of branch of the host plant. The caterpillar penetrates the stem via a wound or pruning scar and devours the pith. It develops slowly till autumn and overwinters *in situ*. Its development is completed in spring and pupation occurs inside the stem (Hluchý *et al*. 1997). Because nearly all the feeding is done within the stem, this borer cannot be reached with contact sprays. Cultural/mechanical control can be achieved by cutting out and burning or otherwise destroying infested canes before June 1st every year, cutting the shoots as close to the ground as possible and crushing the canes to kill any larvae or pupae that may be inside (Grassi *et al*. 2002). Pest control is possible with the support of

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natural enemies. The larvae are attacked by the tachinid fly *Pelatachina tibialis* (Fallén, 1810) (Hluchý *et al*. 1997). A significant damage on the Currant Clearwing moth larvae was caused by predatory nematodes *Steinernema feltiae* (Filipjev, 1934) (Cowles *et al*. 2005). Scott and Harrison (1979) identified two fungi pathogens: *Beauveria* sp. (probably *bassiana*) and *Cordyceps* sp. They also mentioned sucking predators and a potential predator *Forficula auricularia*, which consumes eggs of the moth. Grassi *et al*. (2002) identified a parasitoid wasp, *Macrocentrus marginator* Nees, 1812 (Hymenoptera, Braconidae), which killed larvae in the oldest wood.

Pawpaw (*Asimina triloba* (L.) Dunal) is a native North American fruit species that belongs to the Annonaceae family. *Asimina* grows in the eastern part of the continent, from Florida to South Canada (Callaway 1993). Interest in wide promoting this species increased just after 1960 in the United States, Italy, China, and Chile. In these countries, nurseries were set up and breeding and selection studies were performed in order to obtain new varieties (Stănică *et al*. 2004). Although the pawpaw is frequently extolled for being free of pests, what is not entirely true (Peterson 1991). Horticulturally the most important pest of the pawpaw is the larval stage of a Tortricid moth, *Talponia plummeriana* (Busck, 1906) (Heinrich 1926; MacKay 1959). Another insect pest of potential economic consequence are the larvae of *Protographium marcellus* (Cramer, 1777) (Damman 1986) (Lepidoptera: Papilionidae).

In the integrated plant protection synthetical pheromones are used (Koltun & Yarchakovskaya 2006). Pheromone use as an alternative control method has been applied for monitoring and mating disruption of *S. tipuliformis* (Cardé & Minks 1995; Grassi *et al*. 2002). The sex pheromone of this moth has been identified as a two-component mixture, consisting of (2*E*,13*Z*)-octadeca-2,13-dien-1-yl acetate (*E*2, *Z*13-18:OAc) as a major component (Szőcs *et al*. 1985) and (3*E*,13*Z*)-octadeca-3,13-dien-1-yl acetate (*E*3,*Z*13-18:OAc) as a minor constituent (James *et al*. 2001; Suckling *et al*. 2005).

MATERIAL AND METHODS

The host plant grows as a solitaire tree in a private garden (48°11'4.31"N, 19°13'22.99"E, faunistic square No. 7881) in Čebovce. The host plant is a grafted *Asimina triloba* cv. Prima, which was planted in 2009. The locality Čebovce is situated in the Ipeľ valley (340–370 m a.s.l.) with a typical valley climate, which is characterised as dry and warm with a mean annual temperature of 8.5°C and annual mean precipitation of 620 mm (Tarábek 1980).

The presence of the Currant Clearwing moth was detected on the basis of visible symptoms on damaged branches. The section of the infested branches was carried out to confirm the presence of the larvae. The infested branches were enwrapped by a silk net to trap the imago for identification. The emerged imago was identified according the identification key by Laštůvka and Laštůvka (2001). The level of damage was evaluated according to the count of infested branches on the pawpaw tree.

RESULTS AND DISCUSSION

The Currant Clearwing moth primarily damages plantations of currants, gooseberries, and hazelnuts (Samoggia 1933; Pescott 1935; Hluchý *et al*. 1997; Mazüraitis *et al*. 2006; Laštůvka 2010). At the locality Čebovce we found damage on currants and hazelnut trees caused by the Currant Clearwing moth. We can assume that the damage on the pawpaw tree was influenced by the presence of currants, gooseberry, and hazelnut, which is not a typical host plant. 20% of branches on the host plant *Asimina triloba* cv. Prima were damaged by the Currant Clearwing moth larvae (Figure 1). The leaves on the infested branches started to wilt in mid-August. On the infested branches we did not find parasitoids or pathogens. It is the first finding of damage done by Clearwing moth on *Asimina triloba* as a host plant. *Asimina triloba* is commercially sold in Slovakia and in the last years many growers plant this exotic fruit species which is presented as a fruit tree without pests. Clearwing moth is a potential pest for Slovakia and for countries where *Asimina triloba* is planted and the Currant Clearwing moth is present.

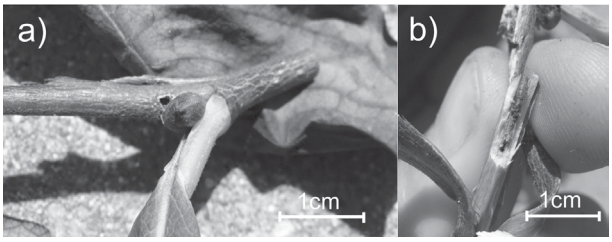

Figure 1. Exit hole on a branch (a) and section of the damaged branch (b) of *Asimina triloba* cv. Prima caused by the currant clearwing moth larva

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