Comparative Evaluation of *Eurytoma schreineri* Schr. Attack Frequency on Transgenic and Two Conventional Plum Varieties

Luminita Antonela ZAGRAI, Ioan ZAGRAI*

Research and Development Station for Fruit-Tree Growing Bistrita, 3 Drumul Dumitrei Nou, Bistrița, 420127, Romania

*corresponding author: izagrai@yahoo.com

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Abstract

The plum seed wasp (*Eurytoma schreineri* Schr.) is a polyphagous pest that can cause significant damages to the plum crop. A transgenic plum variety, resistant to *Plum pox virus*, was evaluated to the attack frequency of *E. schreineri* in the context of reduced number of insecticide treatments against aphids, in comparison with two conventional plum varieties. The most affected variety by plum seed wasp, for two consecutive years, was 'Stanley', followed by 'Reine Claude d'Althan', and then 'HoneySweet' transgenic plum. The differences between variants were statistically assured.

Keywords: *Eurytoma schreineri*, plum seed damage, transgenic plum

Introduction

Eurytoma schreineri Schr. has one generation per year and overwinters as a fully developed larva in the stone of infested fruits. The affected fruits have a weak development and begin to fall as they approach to maturation, and then mummify. 'HoneySweet' transgenic plum was created as a necessity for an effective control to *Plum pox virus* in endemic areas, and has many advantages derived from its resistance to the virus (Scorza *et al.*, 2013), among these being the possibility to reduce the number of treatments with insecticides against aphids (Zagrai *et al.*, 2019). In this context,

the studies have been extended to assess its behaviour to the *Eurytoma schreineri* attack.

Materials and methods

The study was performed within an experimental plot containing twenty-four trees of 'HoneySweet' transgenic plum and twenty-four trees of two conventional plum varieties: 'Stanley' and 'Reine Claude d'Althan'. Only four treatments with insecticides were applied instead of usually 7-8 ones during the two years. The frequency of *Eurytoma schreineri* attack was determined along two consecutive years (2017-2018), on all fruits

Figure 1. Attack frequency (F%) of *E. schreineri* on transgenic and conventional plum varieties

Figure 2. Massive falls of fruits caused by *Eurytoma schreineri* (a) and damages produced by pest (b,c) on Stanley (2017) – original

Figure 3. Duncan test results of attack frequency (F%) of *E. schreineri* on three plum varieties

from each tree. Then a comparison of behaviour between transgenic and the two conventional varieties has been made by Duncan test.

Results and discussions

The results obtained along the two vegetative periods of 2017 and 2018 are shown in Figure 1.

In 2017, results indicated the presence of *Eurytoma schreineri* in all three varieties with a high predilection for 'Stanley' (F%=56.3), being considered a massive attack of seed wasp (Fig. 2) with negative consequences on yield

The other two varieties were also affected by this pest, but the frequency of attack was

much lower, respectively 19.3% on 'Reine Claude d'Althan' and 11.4% on 'HoneySweet'. In 2018, the attack frequency was much diminished in all three varieties, probably due to the decreasing of biological reserve by elimination of the affected fruits fallen on the ground in the previous year. However, the frequency of *E. schreineri* keeps the previous order, the most intense damage was recorded in 'Stanley' (18.1%), followed by 'Reine Claude d'Althan' (8.9%) and 'HoneySweet' (6.8%).

The overall results show that 'Stanley' was the most affected variety by plum seed wasp. 'HoneySweet' and 'Reine Claude d'Althan' were also affected but with significantly lower values than 'Stanley' (Fig. 3).

Conclusions

A reduced number of insecticide treatments could lead to a high damage of yields in 'Stanley'. Although with significantly lower values of attack frequency, 'Reine Claude d'Althan' and 'HoneySweet' can also be affected by *Eurytoma schreineri*.

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