

THE FRUIT FLY PROTECT PROJECT AND ITS ACTIONS REGARDING THE ESSAY OF DIFFERENT TRAPS AND ATTRACTANTS AGAINST *DROSOPHILA SUZUKII* (MATSUMURA) IN AZORES.

David Horta Lopes¹, Joana Rebelo¹ & Elisa Tarantino¹

¹ Azorean Biodiversity Group (GBA) and Platform for Enhancing Ecological Research & Sustainability (PEERS), Universidade das Açores, Faculdade de Ciências Agrárias e Ambiente, Departamento de Ciências e Engenharia do Ambiente, Rua Capitão João D'Ávila, 9700-042 Angra do Heroísmo, Terceira, Azores, Portugal



Introduction

Drosophila suzukii (Matsumura) (Diptera: Drosophilidae) or "spotted winged drosophila" is a pest native from Asia. This species have been introduced in the American and European continent since 2008 and its expansion occurred very fast and in a short time mainly due its great dispersion capability.

It is a polyphagous organism that attacks a wide range of hosts of economic importance, such as strawberry, blueberry, raspberry, cherry, plum, peach and apricot, and may also affect grape, fig and kiwi. Since when *D. suzukii* started to have a great economic impact, monitoring and control are very important. This pest is actually present in Azores and it was first identified in 2016 in S. Miguel and in 2017 on Terceira island. The objective of this work was to evaluate a set of baited traps with a view to find which one is the most effective for capture and control. This study assess the efficiency of three traps and their lures: adapted water bottle with red wine vinegar, Drosotrap® and Suzukii Trap®, in three islands of the Azores Region: São Miguel, Terceira and São Jorge. So the aim of this essay is to obtain information of the efficacy of different traps and attractants to reduce their populations and the damage.

This work was financially supported by the FRUITFLYPROTEC project (ID 205), by the Ministry of Agriculture, under the Rural Development Program (PDR) 2014-2020.

Material and method

The monitoring activities were carried out for 3 years (2018, 2019 and 2020) in S. Miguel, Terceira and in S. Jorge only for the 2019.

In S. Jorge, 2 traps were installed on strawberry: SuzukiiTrap (Fig.6); Drosotrap (Fig.4) in Urzelina and Santo Amaro areas.

In Terceira, Suzukii Trap, Drosotrap, Red cup trap (Fig. 5) and a plastic bottle with vinegar (artesanal) (Fig. 1) were tested (2018 e 2019: vineyards in Biscoitos; 2020: Ribeirinha e Cabo da Praia).

In S. Miguel, SuzukiiTrap; Drosotrap, Red Delta (Fig. 3), Tephri (Fig.2) and plastic bottle with vinegar were tested (2018 e 2019: Capelas e Ribeira das Tainhas/ 2020 Rabo de Peixe e S.Sebastião).

Total number of adults were counted in each trap fortnightly in all the monitoring sites which was followed by the identification of the captured flies with the help of a binocular loupe.

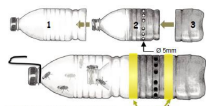


Figure 1 - Bottle filled with red wine vinegar (example).



Figure 4 - Drosotrap (photo by profatefaleide)



Figure 2 - Tephri Trap (photo by the web).



Figure 5 - Red cup trap (photo by the web).



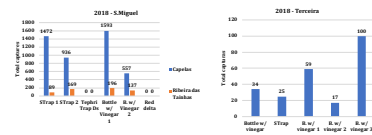
Figure 3 - Red delta (photo by the web).



Figure 6 - SuzukiiTrap

2018

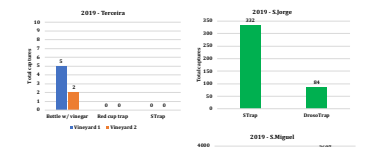
- In S.Miguel (Fig. 7), the plastic bottle filled with vinegar was also the one that registered the higher number of captures.
- In Terceira Island (Fig. 8), all traps had captured *D. suzukii* adults. However, the one that stands out more efficient is the plastic bottle trap.



Figures 7 and 8 - Total sum of adults captured with different traps in S.Miguel and Terceira in 2018.

2019

- S. Miguel (Fig. 9) registered the highest number of captures and the bottle filled with vinegar was the most efficient trap and after SuzukiiTrap. The DrosoTrap did not record any adult catches.
- In Terceira (Fig.10), water bottle with vinegar was the most efficient trap. No catches of *D.suzukii* being recorded in the other traps.
- In S. Jorge is noteworthy for the great effectiveness of SuzukiiTrap compared to DrosoTrap (Fig. 11).



Figures 9, 10 and 11 - Total sum of adults captured with different traps in S.Miguel, Terceira and S.Jorge in 2019.

2020

- In Terceira (Fig. 12) 3 traps were tested on strawberries in Ribeirinha showing greater efficiency in relation to those placed in Cabo da Praia. However, in both locations the most effective trap were different. In the Ribeirinha the bottle with vinegar compost and in Cabo da Praia the SuzukiiTrap.
- In S. Miguel Island (Fig. 13) in the 4 different orchards analysed the responses were different. The vinegar bottle registered the highest captures in all the sites, followed by SuzukiiTrap, only in Capelas.

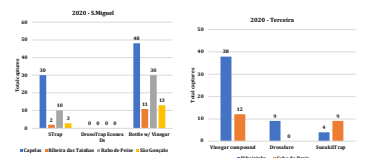


Figure 12 and 13 - Total sum of adults captured with different traps in S.Miguel, Terceira in 2019.

Conclusions

It was found that the water bottle with vinegar trap was the one that registered the highest of *Drosophila suzukii* adults captures. However, Suzukii Trap has also sometimes shown very satisfying results.

In this work it was not possible to test the influence of temperature, hosts and the color of the traps in order to better understand the size of the catches. This work represent just the first step to develop/carry out in the immediate future, an improved selection process for traps and baits, both in monitoring and attracting phases for adults of this important pest of fruits, still unknown to most of our producers.

References

- Bruno, D. 2014. Comparação de dispositivos e iscos para monitorização de *Drosophila suzukii* (Matsumura) (Diptera: Drosophilidae) em pequenos frutos. Dissertação de mestrado em Engenharia Agrónoma. Instituto Superior de Agronomia - Universidade de Lisboa: 3-16.
- Melo, M., Carvalho, C., Pimentel, R., & Lopes, D.J.H. 2018. Detecção de *Drosophila suzukii* (Matsumura) (Diptera: Drosophilidae) na Ilha Terceira, Açores. Revista de Ciências Agrárias, 41 (SP), 211-220
- Rosa, P. 2016. Determinação da curva de voe e possíveis hospedeiros alternativos da praga *Drosophila suzukii* (Matsumura) (Diptera: Drosophilidae) na cultura da framboesa na região do Algarve. Dissertação em Mestrado em Agronomia. Instituto Politécnico de Beja - Escola Superior Agrária de Beja: 13-23.