

THE FRUIT FLY PROTECT PROJECT AND ITS ACTIONS REGARDING THE ESSAY OF DIFFERENT TRAPS AND ATTRACTANTS AGAINST *CERATITIS CAPITATA* WIED. IN AZORES.

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Introduction

The Mediterranean fly (*Ceratitis capitata* Wiedemann) (Diptera: Tephritidae) is considered one of the most dangerous pests for fruit and vegetable production: it is a polyphagous pest, cosmopolitan, multivoltine species which stand out from the others for the high invasive power and its ability to cause economic damages. The adults of *C. capitata* are also capable to disperse and adapt to new environments and ecological niches because of the high adaptability to a wide range of native and cultivated hosts. This pest occur throughout all the year and mainly during the ripening period of fruits. This study aims to compare the efficacy of two different traps, Cera Trap and Tephri Trap, both with attractive food attractants in three different islands: Terceira, S. Miguel and S. Jorge, in the archipelago of Azores. Through the application of biotechnical control and mass capture, valuable information can be obtained to contribute, in practice, to reduce adult populations of this pest and the losses caused on fresh fruit. 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

This study was conducted last in 3 years (2018, 2019 and 2020) and São Miguel, Terceira and São Jorge islands were investigated. In S.Jorge island, the study was conducted only in 2019 because of a delay of traps shipment in 2018 and damaged traps condition due to poor shipment transport in 2020. For all the islands, an essay of 2 different types of traps was performed in citrus orchard: Tephri trap baited with Tripack attractant and Ceratrap and *C. capitata* samples were collected fortnightly. In S. Jorge, 6 Ceratrap and 2 TephriTrap were placed into 2 different sites in Urzelina area. In S. Miguel, Capelas and Ribeira das Tainhas areas were also detected. In Terceira, one Ceratrap traps and 2 Tephri traps were placed in Fontinhas e Biscoitos area in 2018. In 2019, only Biscoitos was investigated. In 2020, S.Bento area was investigated instead of Fontinhas and Triemdlure food attractant was tested as well.



Figures 1 - 2 – Traps used for *Ceratitis capitata* monitoring: CeraTrap (left) and TephriTrap (right).

2018

In S.Miguel, adults captures are higher in CeraTrap on citrus orchard in Capelas. The same results was observed, in Ribeira das Tainhas (Fig. 3). In Terceira, adults captures in Fontinhas are higher in TephriTrap baited with insecticide. In Biscoitos, captures were significantly higher in Tephri Trap baited with Tripack (Fig. 4).

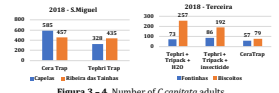


Figura 3 – 4. Number of *Capitata* adults captured sum in 2018 in S.Miguel and Terceira.

2019

In S. Miguel (Fig. 5), the traps tested in 2 citrus orchards in Ribeira das Tainhas and Capelas, in opposition with the results obtained on the other islands, a greater effectiveness of the Tephri Trap baited with Trypack in relation to Cera Trap. In 2019 in Terceira island (Fig.6), only one captured occurred throughout the year and CeraTrap is the most efficient in captures, followed by the TephriTrap with insecticide. In S. Jorge (Fig. 7), data proved that in Urzelina citrus orchard, captures are higher in Cera Trap.

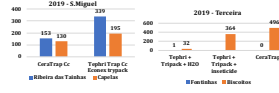


Figura 5 – 6 – 7. Number of *Capitata* adults captured in 2019 in S.Miguel, Terceira, S.Jorge.

2020

In 2020, due to the circumstances already mentioned, no results are presented for S.Jorge. For S.Miguel (Fig. 8), no infestation occurred and the higher number of adults were captured with CeraTrap. In Terceira Island (Fig.9), S.Bento registered the highest captures with TephriTrap baited with Tripack, even if any infestation occurred in this island as well.

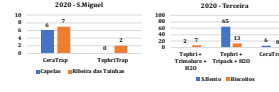


Figura 8 – 9. Number of *Capitata* adults captured in 2020 in S.Miguel and Terceira.

Conclusions

In 2018 in S.Miguel, in both monitoring sites in Capelas and in Ribeira das Tainhas, a huge proliferation of Mediterranean flies in citrus orchard occurred and the most efficient trap was CeraTrap, showing to be the most suitable for monitoring and also a good candidate to be used to fight against *C. capitata* adults. In the same year, in citrus orchard of Terceira island chosen for this study, TephriTrap showed the higher catch rate. In 2019, in Biscoitos citrus orchard a huge infestation occurred, having more than tripled the value of adult catches of *C. capitata* of the previous year. Once again, CeraTrap has shown more efficient, capturing a higher number of flies compared to Tephri Trap, both with water and insecticide. In S.Miguel, although the total number of flies captured were lower than the previous year, a high population abundance occurred. Nonetheless, TephriTrap Tripack proved to be more efficient than CeraTrap in both monitoring sites. In 2019 in S. Jorge, in Urzelina parcel, the total of flies captured in each traps are the high and CeraTrap trap showed a higher success rate and secondarily Tephri trap baited with Tripack. In 2020 in Terceira island, the highest population abundance was recorded in S.Bento and the highest catches amount were recorded in TephriTrap baited with Tripack. In Biscoitos, the highest catches were recorded in TephriTrap baited with Trimedure. Although is not a site involved in the project, the higher number of flies captured in Terceira island is located in S. Sebastião area, in which site 1415 adults were captured with CeraTrap. In conclusion, CeraTrap shows the best results where the population density is very high and likewise with low population abundance and TephriTrap baited with the attractive Tripack showed also very positive results.

References

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