

P118. Soil treatment with Botanigard®WP22 (*Beauveria bassiana* GHA): ON and OFF-season biocontrol tool of *Ceratitis capitata*

L. Costet^{*1}, M. Colacci², G. Bernabei², A. Comte¹, A. Buron-Mousseau¹, J. Rouxel¹, M. Hoarau¹, I. Promi¹, H. Delatte¹, A. Sciarretta²

¹CIRAD, UMR PVBMT, La Réunion, France

²Department of Agricultural, Environmental and Food Sciences, University of Molise, Campobasso, Italy

*Corresponding author: laurent.costet@cirad.fr

Control of fruit flies (Diptera: Tephritidae) is mainly based on insecticide treatments targeting the adults. Targeting the soil-dwelling stages by soil treatment with an entomopathogenic fungus is a strategy to consider. Botanigard®WP22 is a commercially mycoinsecticide based on the *Beauveria bassiana* for use as a spray. The objective of this study was to examine the efficacy of Botanigard®WP22 as soil treatment in orchards, targeting the soil-living stages of *Ceratitis capitata*.

Two sets of experiments were carried out on late L3 larvae. The first consisted in testing a high dose of 10⁷ conidia/g of soil of Botanigard®WP22 in apple orchards in Italy. The second was carried out to test in the laboratory doses (10⁵, 10⁶ and 10⁷ conidia/g of soil) of Botanigard®WP22 and temperature (10, 15, 20, 25°C) effects. The fungus was able to maintain itself in the soils of apple orchards reducing significantly the emergence of flies for at least one year. Laboratory experiments demonstrated i/ that Botanigard WP22 soil treatments significantly reduced emergence and increased mortality of emerged adults of *C. capitata* whatever the dose and temperature tested. *C. capitata* mortality was positively correlated with the dose of Botanigard®WP22 and that 2/ mortality was negatively correlated with the temperature, which demonstrated that it can provide an OFF-season control of *C. capitata*. At low temperature, the fungus remained active while the insect developed slowly or did not.

This biocontrol strategy could be suitable to target the first and the latest generations of *C. capitata* produced in spring and in autumn.

Keywords: biological control, Mediterranean fruit fly, *Beauveria*