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Development and efficacy of Droskidrink, a food bait for trapping *Drosophila suzukii*

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Abstract: Droskidrink is the name given in Trentino, Italy, to a food bait for attracting *Drosophila suzukii* (Matsumura) (Diptera Drosophilidae). It was originally designed in 2011 by a team led by Alberto Grassi. The Droskidrink consists of a mixture of apple cider vinegar (75%), red wine (25%) and 20 g/l of unrefined sugarcane. Its efficacy in comparison with other available food baits has been evaluated in different field trials (monitoring, mass trapping, attract-and-kill) during the period 2011-2013.

Key words: Spotted wing drosophila, *Drosophila suzukii*, Droskidrink, mass trapping, red trap

Introduction

Drosophila suzukii, native of South-east Asia, is a pest of fresh fruits since it is one of the few Drosophilid with serrated ovipositor, which enables it to oviposit in unwounded fresh fruits thereby making them unmarketable. *D. suzukii* is highly polyphagous and, at present, infests various soft skinned fruits including cherry, blueberry, blackberry, strawberry, raspberry, apricot and grapes (Cini et al., 2012). Recently, *D. suzukii* invaded western countries and is now a threat to both European and American fruit industry (CABI, 2014). A highly attractive lure is an important part of integrated pest management strategies. Initial trap designs for monitoring *D. suzukii* utilized apple cider vinegar, grape wine, yeasts and sugar water mixtures, or a vinegar/wine mixture as bait. We report here the results of several field experiments (2011-2013) that led to the development of Droskidrink, the food bait recommended in Trentino and that compared its attractiveness and control efficacy with that of other available food baits for *D. suzukii*.

Results and discussion

In July 2011, a first version of Droskidrink, prepared with only apple cider vinegar and wine, showed a good efficacy in limiting the damage in the inner part of experimental plots treated with the perimeter mass trapping technique as a control method. A further improvement, obtained by adding sugarcane, was observed in August-September 2011, when Droskidrink was deployed as a bait in attract-and-kill experiments in commercial highbush blueberry gardens.

During the same period, results of another trial showed that a red bottle generally performed better than clear bottles in catching *D. suzukii* attracted to apple cider vinegar. Therefore, during the following seasons (2012-2013) the combination Droskidrink-red bottles

was adopted as a tool for the monitoring and control efforts in Trentino with promising results as attract-and-kill and mass trapping devices (part of these results shown in Figure 1). Moreover, in comparative field trials Droskidrink performed better than both commercially available *D. suzukii* lures and food baits recommended in other fruit growing regions. Red bottle traps baited with Droskidrink showed to be more effective in catching *D. suzukii* in spring and able to provide the best estimation of the beginning of fruit infestation. The chemical ecology and the mechanisms underlying the attractiveness of Droskidrink to *D. suzukii* are the focus of our current investigations.

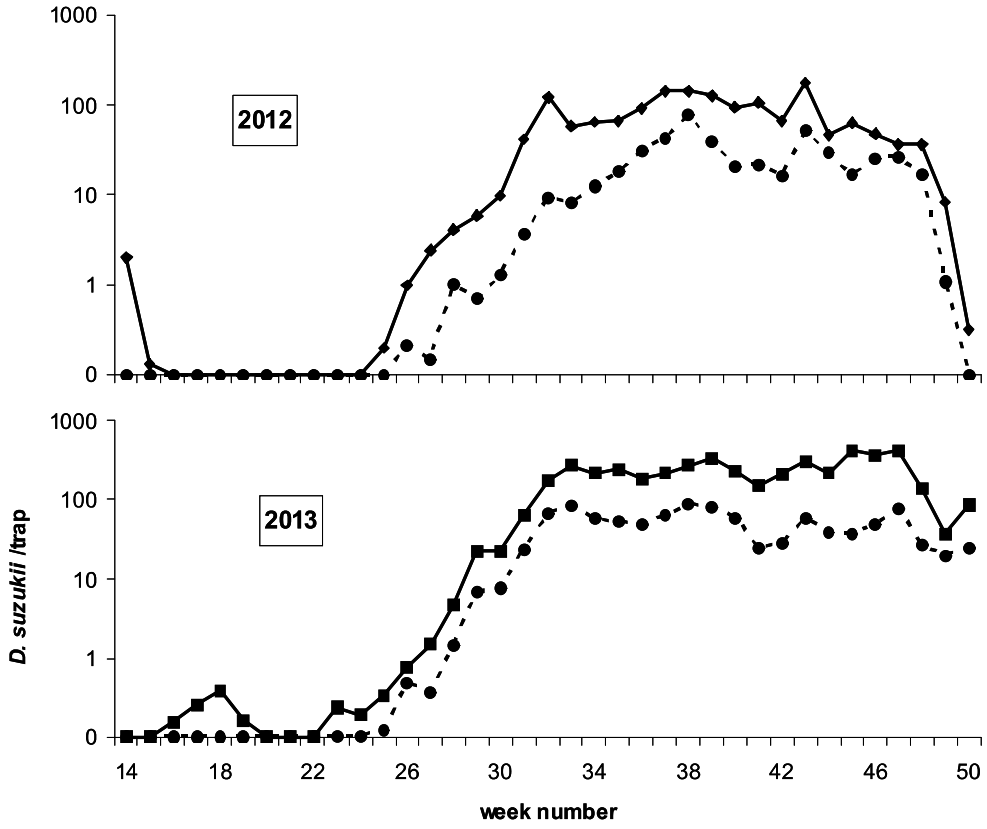

Figure 1. An exemplary graph of a field experiment for the evaluation of Droskidrink. Mean number of *D. suzukii* flies captured in monitoring traps in 2012 (n=63) and 2013 (n=44), from week 14 (beginning of April) to week 50 (mid-December) on a log scale. The solid lines represent red bottles baited with Droskidrink, and the dashed lines clear bottles baited with apple cider vinegar.

References

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