

IDENTIFICATION OF TARGET CHEMORECEPTORS USING COMPARATIVE GENOMICS FOR INTEGRATED PEST MANAGEMENT

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Drosophila suzukii (Diptera: Drosophilidae) is an emerging pest of fruits such as grapevine, berries and cherries. This species is endemic to south-east Asia, but it has recently invaded Europe and America and is spreading rapidly. Unusual of *Drosophila*'s behaviour, *D. suzukii* feeds on fresh, unwounded fruits with the help of its serrated ovipositor thus producing heavy economic losses. The most common strategy to reduce a growing insect pest population would be to use pesticides; this may not be effective in Trentino since the use of broad range of chemicals is being restricted, or is impaired by the particular geography of the province. It thus becomes essential to find alternative measures to control this pest that can be permanent in efficacy as well environmental-friendly. As a way, emphasizing on the genome of *D. suzukii* and possible hints from the analysis of its chemosensory receptors can be a breakthrough in understanding the biology of the pest. It is therefore key to explore the chemosensory receptors in *D. suzukii* to understand the complex nature of how its antennae responds to fresh fruit odors, while those of other *Drosophila* does not. In *Drosophila*, the chemoreceptors consists of large gene families of olfactory and gustatory receptors (OR & GR) and a diverse odorant binding and chemosensory protein families (OBP & CSP). The identification of possible fresh fruit-specific odorant receptors/proteins in *D. suzukii* is relevant for insect pest control. Their discovery will assist in the identification of novel volatile compounds (recognized by such receptors), which would ultimately give new options for control by disruption, mass trapping, or trap crops.