

Field cage study highlights safety of classic biological control agent against devastating invasive fruit fly

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Drosophila suzukii on cherry. Credit: Tim Haye, CABI

CABI scientists have led new research which highlights the safety of a classical biological control agent against the devastating invasive fruit

fly *Drosophila suzukii* which attacks over 150 wild and cultivated fruits, including cherries, blueberries and strawberries, as well as the fruits of ornamental plants.

Drosophila suzukii, or commonly called Spotted Wing *Drosophila*, is a frugivorous insect native to Eastern Asia that was accidentally introduced to the Americas and Europe in the 2000s, where it rapidly spread. Unlike sympatric *Drosophila* species in invaded areas, *D. suzukii* females are able to lay eggs inside unwounded ripening fruits due to their specialized egg-laying organ that is equipped with saw teeth, providing it with a unique niche virtually free from competition.

The resulting high abundance of *D. suzukii* is leading to extensive damage, making it a major problem for [fruit](#) growers, especially in the soft fruit industry.

Field cage releases of the parasitoid G1 *Ganaspis* cf. *brasiliensis* carried out in two regions of Switzerland in August 2021 supports findings from previously conducted laboratory-based experiments and the low risk for non-target effects on native *Drosophila* spp.

The study, carried out with colleagues from the Repubblica e Cantone Ticino, Agroscope, and the Institute of Agricultural Sciences (IAS) of ETH Zurich, and—all in Switzerland, revealed that larvae of the target species *D. suzukii* feeding in fresh fruits was readily parasitized and of 957 emerging parasitoids, only one was from larvae of the non-target species *D. melanogaster* feeding on decomposing fruits.

Lead researcher Dr. Lukas Seehausen, based at CABI in Switzerland, said, "Released parasitoids had the choice to parasitize either *D. suzukii* larvae in fresh fruits, blueberries or elderberries, or the non-target native species *D. melanogaster* in decomposing fruits, which is their natural habitat.

"The results were unequivocal in that parasitism of *D. suzukii* larvae feeding in fresh fruits was on average 15%, whereas only one parasitoid emerged from *D. melanogaster* feeding on decomposing fruits, which is a mere 0.02% parasitism.

"The results achieved under semi-field conditions supports findings from previous laboratory experiments that the parasitoid *G1 G. cf. brasiliensis* is highly specific to *D. suzukii* [larvae](#) feeding in fresh fruits and parasitism of the closely related *D. melanogaster* naturally feeding on decomposing fruits is very rare.

"Because in its invaded range, *D. suzukii* is the only *Drosophila* [species](#) that can attack and develop in undamaged fresh fruits, we conclude that possible non-target impacts are a low and acceptable risk for the control of the destructive invasive spotted wing [drosophila](#)."

In their conclusion, the scientists note that with the first releases of *G. cf. brasiliensis* in Italy in 2021, a recent acceptance of the application for releases of the same parasitoid in the US, and the submission of an application in Switzerland in February 2022, the research starts to be implemented into practice.

The research was published in *Journal of Pest Science*.

More information: M. Lukas Seehausen et al, Large-arena field cage releases of a candidate classical biological control agent for spotted wing drosophila suggest low risk to non-target species, *Journal of Pest Science* (2022). [DOI: 10.1007/s10340-022-01487-3](https://doi.org/10.1007/s10340-022-01487-3)

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