

Biological control without a single bite: the case of the fig wasp *Blastophaga psenes* and the black fig fly *Silba adipata*

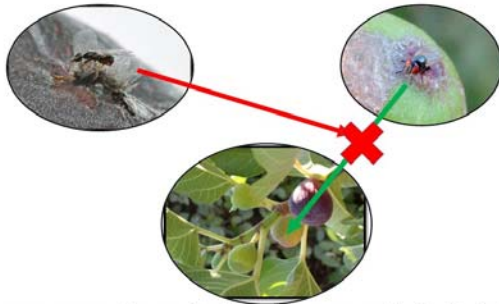
Dr. Liora Shaltiel-Harpaz

Tel-Hai College

14/12/2021, 12:00, George Evens family auditorium, Sede Boqer Campus

Before the seminar we will have a gathering and mingling in front of George Evens family auditorium. Drinks and snacks will be provided. You are encouraged to bring your own coffee cups. Please join us at [11:45](#).

Biological control without a single bite:



***Blastophaga psenes*- the pollinating fig wasp protects fig fruit from the black fig fly *Silba adipata* without feeding on it**

Photos: Rika Kedoshim

The common fig (*Ficus carica* L.) is one of the oldest fruit species cultivated, and is widely grown in warm and dry climates across the world. Fig pollination is a consequence of the complex symbiotic relationship of the host and the wasp *Blastophaga psenes* L.

One of the major pests of figs is the black fig fly *Silba adipata* MacAlpine. This fly is a monophagous, multivoltine pest that oviposits exclusively in the ostiole of unripe syconium ('fruit') of cultivated and wild figs. *S. adipata* occurs in the Mediterranean and Middle-Eastern countries and recently it was also recorded from South Africa and the Maltese Islands. This fly inflicts heavy losses on the fig crop by the larvae feeding on it and causing up to 50% unripe fruit to drop and ripening fruit to rot.

Despite its importance as a major pest that threatens worldwide fig cultivation, until today it is unclear what attracts *S. adipata* to the fig fruits.

In this research we tried to answer this open question hypothesizing that black fig fly "hijack" the complex communication between the fig and its pollinator and is attracted to the volatiles of the fruit that originally indicate to the wasp when it is most suitable for pollination, which happens to be the most suitable time for the fly oviposition. Using the platform of the main fig cultivar used in commercial fig crops in Israel, with facultative parthenocarpy, gave us the opportunity to study the effect of pollination on fig fruit volatiles during the fruit development, in comparison to fruit developing without pollination in the same conditions on the same trees.

In the current study we measured the effect of fruit pollination on the behavior of the black fig fly and described the changes in fig volatiles in pollinated and parthenocarpic fruit along their development period, emphasizing carotenoid accumulation and apocarotenoids content.

Our results indicate that unpollinated figs are attractive to the fig fly and that pollination by the fig wasp apparently changes the VOCs of the fruit making them less attractive and therefore more protected against the damage of the fly.