

## Volatile compounds of the main hosts of the European Cherry Fruit Fly, *Rhagoletis cerasi*

Kirsten Köppler\*, Frank Sporer\*\*, Michael Wink\*\*, Heidrun Vogt\*\*\*

\*Heidelberg University, Institute of Zoology, Im Neuenheimer Feld 230, D-69120 Heidelberg, Germany

\*\*Heidelberg University, Institute of Pharmacy & Molecular Biotechnology, Im Neuenheimer Feld 364, D-69120 Heidelberg, Germany

\*\*\*Federal Research Centre for Agriculture and Forestry, Institute for Plant Protection in Fruit Crops, Schwabenheimer Str. 101, D-69221 Dossenheim, Germany

The European cherry fruit fly (*Rhagoletis cerasi* L.) is presently the most serious pest in cherries in Europe. Beside *Prunus avium* (Rosaceae), the fly honeysuckle, *Lonicera xylosteum* (Caprifoliaceae), is the second main host of cherry fruit flies. *R. cerasi* has a divergent phenology according to the fruiting time of its respective host plants. Furthermore, flies show differentiation in their host choice behavior, and their response to host marking pheromone. In spite of these phenological and behavioral adaptations, genetic studies showed no clear pattern indicative of host races in *R. cerasi*. Beside this, *R. cerasi* with *P. avium* as host, show a stronger plasticity in choosing *Lonicera* as oviposition device. These results raise the question for fruit volatiles of the different hosts. Do they have compounds in common? Which is their importance for host location and their potential for a bait and kill strategy to control the pest?

To answer these questions, head space sampling of cherries and honeysuckle berries in different ripeness degrees with and without leaves were carried out. Samples of volatile cocktails were analysed by using GLC / MS.

All together, 19 volatiles were found in both of the two main hosts of *R. cerasi*. There does not seem to exist any specific component of Caprifoliaceae or Rosaceae. Most of the compounds were described for several plant families or for other organisms, like insects or fungi. Among them are typical green leaf volatiles, parts of essential oils of different plants, substances which act as defence of plants against herbivores or components of the chemical communication system of different insects.

Nevertheless, volatile components are important for host location for fruit flies. In lab experiments, *R. cerasi* host races are able to recognize the opposite host in each case. In further tests, the attractiveness of the different volatiles and their combinations will be investigated in egg laying experiments. Therein, solvents, application technique or cage environment can be varied.