

***Trichopria drosophilae* - a potential candidate to control *Drosophila suzukii* in Germany?**

Camilla Englert¹, Eva-Maria Dumath² and Annette Herz¹

¹Julius Kühn-Institut, Institute for Biological Control, Darmstadt

²Technical University of Darmstadt, Department of Biology, Darmstadt

E-mail of corresponding author: Camilla.Englert@julius-kuehn.de

Ongoing research aims to identify native parasitoids of Drosophilidae in Germany and tries to assess their ability for natural control of the invasive fruit pest *Drosophila suzukii*. In the years 2015 and 2016, samplings of native parasitoids took place in North, South and Central Germany. We captured seven different local parasitoid species in Germany. For the first time, the wasp species *Trichopria drosophilae* PERKINS (Hymenoptera: Diapriidae) was recorded in Germany. It develops as endoparasitoid in *Drosophila* pupae and is currently under investigation in other regions of the world invaded by *D. suzukii*. The biology and ecology of this species in Germany is completely unknown. Therefore, we started to examine important biological attributes of two German strains to evaluate the suitability of *T. drosophilae* as potential biocontrol agent for pest management of *D. suzukii* in Germany. After confirmation that *T. drosophilae* is able to parasitize the target pest successfully, we explored the acceptance and suitability of different developmental stages of *D. suzukii* pupae as host. *T. drosophilae* females accepted all, except very old, pupae during their metamorphosis which lasted seven days at 23 °C. For an effective breeding regarding sex ratio, success of progeny development and size of parasitoids, two to four day old pupae were most suitable as host. In

addition, lifetime fecundity, progeny production and sex ratio of the progeny during the life period of female parasitoid were investigated in the two German populations. Females accomplished their full egg-load with mature eggs within four days after hatching. Furthermore, there was a positive relationship between size of females and number of mature eggs. Females and males of both strains lived on average more than 30 days. The number of eggs produced over the whole lifespan was higher in the Central German population ($85,5 \pm 2,7$ eggs/female) than in the South German population ($80,7 \pm 3,4$ eggs/female). Compared to this the female offspring was slightly superior in South German population (61 %) than in Central German population (46 %). Progeny development usually lasted about three weeks in both strains.

The knowledge of these basic values of the reproductive biology of the German strains of *T. drosophilae* allow a first assessment of their potential for natural regulation of *D. suzukii* and also for potential use in mass-production and release programmes. Of course, many other questions on phenology, habitat and host location, host preference etc. need to be addressed and to be tested in further experiments, especially in the open field.