with the exception of one, *Trichogramma* was present. First activity was observed in the middle of April and the beginning of May. The latest date of *Trichogramma*-activity was detected in the beginning of November. The highest *Trichogramma*-activity in the apple orchards and their surrounding was recorded in April/May and September/October. In cabbage fields *Trichogramma* was active between June and October. Preliminary species identification revealed three *Trichogramma* species; *Trichogramma cacoecia*, *T. evanescens* and *T. embryophagum*. Over 400 *Trichogramma* lines were found and more than 200 of them were in culture. The study demonstarted that *Trichogramma* exists in the cultivated landscape with a high consistency. Agroecosystems such as the studied organic cabbage fields and apple orchards provide new *Trichogramma*-lines and contribute agrobiodiversity. The different *Trichogramma*-lines that could be reared in the laboratory might supplement existing lines as biocontrol agents.

Interference between the egg parasitoid *Trichogramma cacoeciae* Marchal and the egg-larval parasitoid *Ascogaster quadridentata* Wesmael and their host *Cydia pomonella* L.

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The egg parasitoid *Trichogramma cacoeciae* and the egg-larval parasitoid *Ascogaster quadridentata* are important biocontrol agents of several fruit damaging Tortricidae, including the codling moth *Cydia pomonella*. The potential interference between these two wasps when exploiting their common host source, the codling moth egg, was explored in a series of laboratory experiments. When offering host eggs in different developmental stages, *T. cacoeciae* was more successful in parasitizing fresh or medium-aged eggs in comparison to eggs with a developed larva just before hatching. In contrast, *A. quadridentata* showed no preference for any developmental stage of the host egg and parasitized them all successfully. When observing the ovipositon behaviour, *T. cacoeciae* exhibited host-feeding, whereas *A. quadridentata* never showed this kind of host exploitation. On average, a female of *T. cacoeciae* needed 122 sec for oviposition into a host egg. Females of *A. quadridentata* oviposited within 8 sec. In the non-choice situation, *T. cacoeciae* accepted and successfully parasitized eggs, which had been previously parasitized by *Ascogaster*. However, in the choice situation, *T. cacoeciae* was also able to discriminate and preferred non-parasitized eggs for oviposition. Eggs which had been previously parasitized by *Trichogramma*, were less attractive for *A. quadridentata,* which contacted and parasitized these eggs significantly less than non-parasitized ones. In multi-parasitized eggs*, T. cacoeciae* was the higher competitor due to its idiobiont development, independently whether parasitism by *Ascogaster* occurred before or after *Trichogramma* parasitism. Host location of the two species was compared in cage tests using codling moth eggs placed on the foliage of apple

tree twigs. Both species demonstrated a high searching efficiency resulting in 70 % (*A. quadridentata*) to 80 % (*T. cacoeciae*) egg parasitism in control cages, where only one parasitoid species had been released. In cages, where both species had been released simultaneously, significantly fewer eggs were parasitized by *A. quadridentata* (about 30%). Nevertheless, the release of both species resulted in 100 % parasitism of the offered codling moth eggs, suggesting some kind of synergism. Following these results, the potential relationship between the two parasitoids should be studied also under natural conditions to evaluate their common effect on the host population and thus potential for biocontrol of the codling moth.

The hoverfly *Parasyrphus nigritarsis* [ZETTERSTEDT, 1834] as a natural antagonist of the great red poplar leaf beetle (*Chrysomela populi* L.) in short rotation coppice

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Due to the use of only few varieties and species, short rotation coppice (SRC) plantations are highly susceptible to biotic agents. At present, the great red poplar leaf beetle (*Chrysomela populi* L.) is the main insect pest, and is becoming an increasingly important economic factor in the management of SRC. In order to minimize the loss of increment through insect damage while simultaneously reducing the use of plant protection products, nature-based management strategies are being studied in the project 'AgroForNet' (funded by the German Federal Ministry of Education and Research). In 2013, the potential of the hoverfly *Parasyrphus nigritarsis* to control *C. populi* was investigated. Two different experiments were designed for this purpose. Experiment one was a field experiment in Großschirma (Eastern Germany, Saxony) to quantify the predation rate under normal outdoor conditions. From May 13th to June 5th all egg clusters on 60 poplar stems were photographed every two to three days. On the basis of the photo series it could be determined that on 88 % of the plants an impact of *P. nigritarsis* was either directly visible (57.7 %, larvae of *P. nigritarsis* visible in egg cluster), very likely (16.3 %, larvae visible next to egg cluster) or likely (26 %, larvae not visible, but eggs predated). Eggs of *P. nigritarsis* could be found on 50 % of all egg clusters, with the average number of eggs of 5.4 (±4.24). The second was a laboratory experiment using two different temperatures (15±1°C and 20±1 °C), 70-80 % relative humidity and 16:8 (L:D) h photoperiod. The larvae were bred and reared in Petri dishes (94 x 16 mm) filled with a thin film of agar-agar (cobe I). Larvae of *P. nigritarsis* were fed eggs of *C. populi* exclusively and observed twice a day. The sample size for both temperature regimes was 25°C. The mortality was 0 % for 20°C and 32 % for 15°C. The developmental time from hatching to diapause was 19.7±2.9 days for 15°C and 14.5±1.4 days for 20°C. The number of eggs consumed during development was 270±36.9 for 15°C and 293±23.1 for 20°C. The high predation rate in the field and the results of the laboratory experiment suggest that *P. nigritarsis* may be a strong candidate for biological control programs.