

Spatial and temporal dynamics of *Trioza apicalis* in organic carrot cultivation

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The carrot psyllid *Trioza apicalis* (FOERSTER 1848) is known in Scandinavian countries as a main pest in carrots and in case of mass occurrence. It can cause devastating damage up to total loss of harvest. Carrots are produced on about 12.500 ha in Germany with up to 1.700 hectares of organically cultivated carrots. Increasing cultivation of a particular crop also increases the risk of culturally specific pathogens. Since the availability of pesticides is limited in organic farming, other plant protection measures are needed to protect the cultivated crops. Here, the carrot psyllid *T. apicalis* is studied in Lower Saxony with a carrot production area of about 500 hectare. We needed to learn more about behavior of the pest and the symptoms of damage on carrot plants. With systematic assessments for leaf damage symptoms and two complementary laboratory experiment in which the sedentary nature of *T. apicalis* was studied, we performed estimates and spatial distribution of the pest in the tracked area. We observed the temporal migration of *T. apicalis* into carrot populations using a monitoring system on 17 plots in 2017 and 14 plots in 2018 in Lüneburg and Weserbergland. The monitoring took place with two yellow traps on each plot, which were changed weekly and evaluated.

The Rating of harmful symptoms took place on 9 plots in 2017 and on 12 plots

in 2018. The leaf deformation was measured. To estimate the potential for damage, we carried out a laboratory experiment in which high and low infestation with *T. apicalis* was simulated.

In the experiment of Sedentariness, we measured the potential of *T. apicalis* to move from one to another plant.

It could be shown that 84% and 67% of the insects arrive on the carrot areas between the end of May and the end of June. During this time the carrots are particularly endangered due to their young stage of development.

The monitored areas in the Lüneburg area were more heavily affected in both years of investigation than those in Weserbergland. Due to the very cold and wet weather in 2017 and the very hot and dry weather in 2018, the infestation was very low on all plots.

The high infestation with 5 *T. apicalis* per plant showed clear damage after two days already with symptoms on the leaves, whereas the low infestation with one insect per plant showed no symptoms. The studies are intended to predict the extent to which *T. apicalis* poses a threat to organic carrots cultivation in and serve as a support for decision making for carrot growers whether and to what extent they use pesticides and / or other control measures.