

A novel mode of resistance of codling moth against *Cydia pomonella granulovirus*

Annette J. Sauer¹, Eva Fritsch¹, Karin Undorf-Spahn¹, Johannes A. Jehle¹

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

Email of corresponding author: annette.sauer@jki.bund.de

The codling moth (CM, *Cydia pomonella*) is one of the most devastating pests in nearly all pome fruit growing regions. An alternative to the application of chemical insecticides is the application of *Cydia pomonella granulovirus* (CpGV) (family *Baculoviridae*), which is registered as biological control agents in 34 countries worldwide. Since 2005, CM populations with a reduced susceptibility to CpGV products have been reported from about 40 plantations in seven European countries. For many of these CM populations, the resistance could be traced back to a single, dominant allele that is linked to the sex chromosome Z. CpGV-M, the so-called Mexican isolate, was the common agent used in all commercial CpGV products registered in Europe. Currently, resistance management strategies are based on the application of improved CpGV products, containing resistance-overcoming isolates.

However, a CM field population, termed NRW-WE showed even resistance to most resistance overcoming CpGV isolates, suggesting a second mode of CpGV resistance.

In order to elucidate the inheritance of this type of resistance and after failure of single crossing experiments, successive mass crossings under virus pressure were carried out to establish a genetically homogenous resistant strain of the CM population NRW-WE. Subsequent reciprocal crossing experiments with the resulting CM strain and a susceptible laboratory CM strain (CpS) followed by bioassays fitted to a dominant but autosomal inheritance model. Further analyses of the mode of resistance are under way.