

Pesticide Resistance

Comparison of Several Bioassay Techniques to Determine Levels of Susceptibility of Pear Psylla to Several Insect Growth Regulators (IGRs)

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*Keywords:* pear psylla, *Cacopsylla pyricola*, Insect Growth Regulators, pear

Pear psylla is an important pest of pears and a major problem with trying to control it is the development of resistance. Resistance risk assessments are used to establish baseline levels of susceptibility using a standard bioassay, monitor levels of susceptibility in natural populations, and implement management tactics accordingly.

This study focused on the first step by developing an effective IGR bioassay, then using it to establish baseline levels of susceptibility for three JH analogs and three chitin inhibitors. There were many difficulties in the development of the IGR bioassay. Despite these barriers, baseline levels of susceptibility were established for all chemicals examined. The most interesting pattern seen in the JH analog bioassays was an increase in variation over time, which was thought to be caused by the increase in leaf age. A second set of bioassays, in which the leaves were all the same age, was run to test this hypothesis and still there was a significant amount of variation. This suggested that leaf age was not the cause of the variation observed. Another hypothesis was that the age of the pear psylla females might affect the variation in the bioassay. Experiments run to test this hypothesis showed improvement in two of the three JH analogs examined.