

Use of NPV viruses and *Bacillus thuringiensis* bacteria for *Lymantria dispar* population control

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Institute of Biology has been working on problems, which included development of microbiological methods for plant protection in Latvia for many years. Occurrence of entomopathogenic viruses and bacteria in gypsy moth larvae has been studied. Observations of natural epizootics and collecting of insects has been done near Liepāja in 2008 and 2009.

Bacillus thuringiensis is widespread in nature and readily persists in soil and sediments (Lacey, Kaya 2007). Nuclear polyhedrosis viruses (NPV), which are frequently associated with outbreak or declining populations of Lepidoptera, cause diseases of insects and can control the population size of their hosts. NPVs are considered to be safe biological insecticides and have a great potential in pest control.

The aim of the study was to extend the knowledge of baculoviruses' and bacterial efficiency in regulation of pest populations. Gypsy moth larvae were collected from natural habitats applying standard methods. After collecting a part of living insects was placed in sterile isolators for observations. Reasons of death were evaluated by applying microscopy (Olympus CX 41).

Remaining insects were divided into groups of 20 - 100 individuals and put on feeding plants (oak branches), sprayed with different infective substances (*B. thuringiensis* various isolates and NPV *Lymantria dispar* nuclear polyhedrosis viruses (Latvian wild isolate) isolated in 2008 and *Malacosoma neustria* nuclear polyhedrosis viruses).

Number of dead and living insects was enumerated regularly and corrected cumulative mortality was calculated.

The results suggest that both *B. thuringiensis* and NPVs are effective against *L. dispar*, showing high corrected cumulative mortality per cents (till 90.1 % on the 14th day of experiment applying *L. dispar* NPV).

References:

Lacey, Kaya. 2007. Field Manual of Techniques in Invertebrate Pathology. Application and Evaluation of Pathogens for Control of Insects and other Invertebrate Pests. "Springer", USA, 868 pp.