

**PATHOGENS OF EUROPEAN PINE SAWFLY (*NEODIPRION SERTIFER*)
AND THEIR APPLIANCE IN FOREST PROTECTION**

Jūlija Haļimona, Līga Jankevica, Zane Metla, Rita Seškēna, Valentīna Petrova

LU Bioloģijas Institūts

Adrese: Miera iela 3, Salaspils, LV-2169

e-pasts: julija_halimona@inbox.lv

Over the past 30 years the protection of the environment has gained increasing public attention. Rapid spread of forest pests can threaten forest stands and cause significant damage to forestry.

In recent years mass outbreaks of pine sawfly were stated in Ventspils, Kuldīga and Valka districts.

Intensive use of chemical pesticides is not advisable in Latvian climatic conditions, that are characterized by relatively low solar intensity, which prolongs degradation period of chemical compounds in nature. One of the ways how to fight against pest outbreaks, leaving no permanent effect on forest ecosystems, are insect pathogens: viruses, fungi and bacteria.

The aim of the study was to evaluate the presence and impact of different pine sawfly pathogens.

During the study *Neodiprion sertifer* specimens were collected and surveyed in sampling plots set across Latvian territory near Valka, Venta, Kalsnava, Padure, Engure and Ance. In obtained insects the presence of pathogens was evaluated.

The results suggest, that Nuclear Polyhedrosis Virus (in active or persistent form) was present in all of sampling plots, except Kalsnava. Pathogenic and conditionally pathogenic bacteria, and microscopic fungi were extracted from collected pests, which are stored as pure cultures.

Microbial analyses of larval midgut microflora showed that visibly healthy sawfly larvae also contained potentially pathogenic bacteria. Average number of bacterial CFU per larva was $30,1 \pm 9,1 \times 10^6$.

In order to promote the development of latent infection in insects, different stress factors were applied. The best results were obtained using extreme temperatures variation (corrected cumulative mortality of pine sawflies was $77,3 \pm 4,9$ %) and feeding with pine needles, sprayed with 0,5 % Cu SO₄ (corrected cumulative mortality was $80,0 \pm 3,5$ %).

The effectiveness of viruses and bacteria were tested during field experiments.