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Abstract

A Survey of Potential Insect Vectors of Mountain Pine Proliferation Decline Phytoplasma in Curonian Spit, Lithuania †

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Abstract: Mountain pine (*Pinus mugo* Turra) is a coniferous native to the highlands of central Europe. Our previous study revealed that mountain pine proliferation decline (MPPD) disease in the Curonian Spit of Lithuania is caused by a '*Candidatus* Phytoplasma pini'-related strain (16SrXXI-A). However, the insect vector of MPPD has not been identified. In this study, we conducted a survey to determine potential insect vectors of MPPD phytoplasma for three consecutive years (2016–2019). More than 1000 insect samples were collected from four locations in the Curonian Spit. These insects were identified as belonging to six families and ten genera. The presence of phytoplasma in insect samples was examined by nested polymerase chain reaction (PCR) using phytoplasma-specific primers (P1A/16S-SR and R16F2n/R16R2n). Phytoplasmas were detected in *Cinara* (*Cinara*) *pini* (Scots pine aphid), *Cinara* (*Cinara*) *piniphila* and *Cinara* (*Schizolachnus*) *pineti* (waxy grey pine needle aphid) insect samples. Subsequent restriction fragment length polymorphism (RFLP) analysis showed that the PCR-RFLP profile of these positive insect samples was consistent with that of the MPPD of diseased pine trees. These results suggest that *C.* (*C.*) *pini*, *C.* (*C.*) *piniphila* and *C.* (*S.*) *pineti* may be potential insect vectors of MPPD phytoplasma. The findings from this survey will provide useful information for the management of MPPD disease.

Keywords: phytoplasma; insect host; *Ca.* Phytoplasma pini; aphids; *Cinara*; *Shizolachnus*

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