

## A survey on diseases and pests of seabuckthorn grown in Latvia

**Dmitrijs Konavko<sup>1</sup>, Arturs Stalažs<sup>1</sup>,  
Olga Sokolova<sup>1</sup>, Māris Jundzis<sup>1</sup>, Maksims Balalaikins<sup>1, 2</sup>,  
Jamshid Fatehi<sup>1</sup>, Inga Moročko-Bičevska<sup>1</sup>**

<sup>1</sup>*Institute of Horticulture, Latvia University of Agriculture,  
Graudu iela 1, Ceriņi, Krimūnu pag., Dobeles nov., LV-3701, Latvia,  
email: arturs.stalazs@llu.lv, inga.morocko@llu.lv*

<sup>2</sup>*Institute of Life Sciences and Technologies, Daugavpils University,  
Vienības iela 13, Daugavpils, LV-5401, Latvia*

The common seabuckthorn (*Hippophae rhamnoides*) has been mainly used as an ornamental plant since its introduction into the territory of Latvia. In 1984 the first seabuckthorn plantation was established as a fruit orchard. Nowadays the seabuckthorn is one of the most important commercially grown fruit plant. Despite the rapid increase of commercial seabuckthorn plantations during the last 20 years, the occurrence and distribution of pests and diseases have not been studied. During the recent years concerns of growers have raised on spread of diseases and pests in seabuckthorn orchards in Latvia. As a response to grower concerns, the research was initiated on distribution and identification of seabuckthorn diseases and pests prevailing in Latvia.

In total 55 locations in Latvia including both commercial orchards and wild habitats of seabuckthorn have been surveyed since 2014. The samples from branches, roots and trunks with diverse disease symptoms were collected. Fungi and bacteria were isolated from the collected materials and preserved as pure cultures. Identification of fungi was carried out by means of morphological characters and the sequencing of ITS region and 28S rDNA fragments. Bacterial isolates were characterized using biochemical and phenotypic characterization by LOPAT and GATTa tests. Survey on seabuckthorn pests were carried out from 2010 and monitoring of potentially important pests has been performed since 2013. From 2014 pests were also surveyed in the same localities as for diseases, and data on distribution of pests were obtained.

Severe canker and dieback symptoms often resulting to death of the infected plants were observed in several orchards. The characteristic symptoms for bud bacteriosis were also noticed. So far a number of isolates belonging to the known pathogenic fungal genera causing tree cankers and dieback, such as *Stigmina*, *Phomopsis* and *Cytospora*, have been identified. *Pseudomonas syringae* was isolated from symptoms resembling bud bacteriosis. The role and importance of these microorganisms associated with diseased plants need to be investigated. Characterization of the isolates and assessment of their pathogenicity on seabuckthorn are in progress.

Including the monophagous aphids listed in the literature, more than 30 invertebrate pests associated with seabuckthorn are recognised in Latvia. Among these, *Rhagoletis batava* (Diptera) was identified as potentially important for the whole country and *Gelechia hippophaella* (Lepidoptera) as sporadically important (heavy damages on host found only in two localities). *Rhagoletis batava* has been reported as important pest in some other countries, therefore the monitoring of this pest was carried out since 2013. Severely damaged fruit were also recorded in several locations in Latvia. The yield of seabuckthorn was severely damaged by some birds, especially *Sturnus vulgaris*. During the surveys plant damages caused by the European roe deer (*Capreolus capreolus*) was also encountered in most of the orchards, as fencing of plantations is not a common practice for seabuckthorn in Latvia.

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