

Research carried out in the framework of the project “Molecular basis of pathogenesis and taxonomy of bacterial and fungal pathogens of blueberry” refer to cognition of the pathogenicity and virulence genes, indication of differences in the pathogen response during the infection process, and determination of phylogeny of bacterial and fungal pathogens occurring on blueberry (*Vaccinium corymbosum* L.), which due to nutritional values of fruits and preventing of the occurrence of many diseases, including cancer, is now, one of the most popular plantations in Poland, giving us a leading position in Europe.

For several years, bacterial and fungal diseases affect the health and yield of stone and pome fruit trees and cause serious economic losses in agriculture around the world, also in Poland. The pathogens attack all the aboveground parts of the plants, both woody and herbaceous: mainly trunk, shoots, leave, flowers and fruits of the trees. Can be easily disseminated by wind, rain, insects, pruning tools or introduced with infested propagation wood or infested nursery stock. From observations and reports from growers and plantators, it appears that disease severity is much increasing compared to previous years. The symptoms of various hitherto unknown etiology are also observed on blueberry crops. We assume that due to climate warming up in our country and a very intense international exchange of plant material both seedlings and fruit themselves we should be aware of the possibility of emerging the new pathogens of blueberries also including those listed as quarantine organisms by EPPO. Among the bacterial plant pathogens, the most numerous are bacteria belonging to *Pseudomonas* genus. Losses of economic importance in fruit production are caused by polyphagous bacteria of *Pseudomonas syringae*, infecting more than 180 plants species. Another, commonly occurring also in Poland bacterial pathogen of blueberries are tumorigenic bacteria of *Rhizobiaceae* family. They are widely distributed on dicots, caused crown gall which affect on the health of plants by impairment of the conduction of water and nutrients. Moreover, more and more frequently fungal pathogens appear in the cultivation of blueberries. So far, we may know few different species that cause formation of shoots lesions and dieback leading to the significant losses in the plantations of blueberries. However, research on the species that infect blueberries in the world are not consistent. Besides of them, we cannot exclude the possibility of occurring also such infecting vascular bundles and leading to the death of the whole plant.

It is worth to emphasizing that due to the similar nature of the symptoms and the absence of typical etiologic evidence after plants infection, by both bacteria and fungi, very often it is impossible to determine their causative agents without laboratory analysis.

The aim of the project will be studies on causal agent of the diseases on blueberry taking into account the molecular basis of pathogenesis and the identification of species and taxonomic position of bacterial and fungal pathogens occurring in the cultivation of blueberries in Poland. The results that will help determine the phytosanitary risk and will be a key insight into the pathogenesis. The knowledge acquired through this project can be the basis for the development of improved phytosanitary strategies. The proposed research goes beyond the current state of the art and these are undoubtedly pioneering studies with high cognitive potential in mycology, bacteriology, phytopathology, genetics and taxonomy.