

Abstract

Sooty bark disease (SBD) caused by pathogen *Cryptostroma corticale* is one of the current risks to the population of sycamores in Europe. A few dozen individuals were fallen death due to sooty bark disease from the first record in Prague in 2005. However a higher rate of infection in a latent non-symptomatic stage can be assumed. The main goal of the thesis was to quantify the extent of infection *C. corticale* in Prague on the basis of early detection in tissues of symptomless trees and identify its environmental requirements and stress factors conditioning the progression of the disease. Another goal was to predict the risk for Prague's population of sycamore based on obtained data and identify other vulnerable sites in Prague. A secondary aim was to assess the spectrum of fungi inhabiting xylem of sycamore. Tissue samples collected with an increment borer were subjected to: a) isolation of cultivable fungi on malt agar and b) detection of the DNA *C. corticale* based on *nested* PCR with species-specific primers. Latent infection was detected in 28 of the cores. Of 27 positive detections with primer specific *nested* PCR 10 were supported by isolation of *C. corticale* on agar plates. Only in one case positive isolation of *C. corticale* on agar plate was not confirmed by *nested* PCR. Occurrence of *C. Cortical* was recorded in all of parks with a known incidence of the disease and also in 3 new sites in Prague. The infection has occurred significantly more frequently in trees with tissue discoloration growing at the edge of vegetation in localities with higher concentration of pollutants in the air. Out of 112 cores 94 isolates belonging to 50 different taxa of 15 orders were obtained. The spectrum of cultivated fungi included, among target pathogen *C. corticale*, other pathogenic or endophytic species. The occurrence of fungi was bound to cores with discoloured tissues in which they can be present as secondary colonizers or causal agents of this defect. Discoloration or decay appeared in 72% of all the cores and was the most frequent tree damage recorded together with crown dieback and bark cracks.

Keywords: *Cryptostroma corticale*, *Acer pseudoplatanus*, early detection, *nested* PCR, specific primers