

STSM title: ***Botryosphaeriaceae* species associated with the die-back of ornamental trees in the Western Balkans**

Short Term Scientific Mission (STSM), COST Action FP1401

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During the last decade die-back and mortality of various ornamental trees has been observed in parts of the Western Balkans region. The disease symptoms were typical of opportunistic pathogens residing in the fungal family of Botryosphaeriaceae. The main purpose of this STSM was to identify Botryosphaeriaceae species isolated from diseased, native and exotic ornamental trees in Serbia and Montenegro. Three isolates of the Botryosphaeriaceae were subjected to analyses using multiple gene regions of TEF-1- $\alpha$  gene, part of the  $\beta$ -tubulin gene and part of the large subunit rDNA (LSU) gene, whereas 30 isolates were identified using Internal Transcribed Spacer (ITS) sequence comparisons. Maximum likelihood and maximum parsimony phylogenetic analyses of isolates sequenced during this STSM revealed six known species of the Botryosphaeriaceae belonging to four different genera, namely *Botryosphaeria*, *Dothiorella*, *Diplodia* and *Neofusicoccum* (Table1).

The results of this STSM expanded the known host and geographic range of all six identified Botryosphaeriaceae species and 13 new host-fungus associations were established. Some of the results of this STSM have already been submitted to the peer-reviewed academic journal of microbiology “Antonie van Leeuwenhoek”.

The results of this STSM illustrate the value of sentinel plantings for the detection of pest-host relationships. These plantings are especially important as isolations of the Botryosphaeriaceae from such a great number of hosts might suggest that the risk of even wider host range than described here is high. The wide distribution of these fungi and their common association with the die-back and other symptoms suggested Botryosphaeriaceae species could represent important pathogens of the ornamental trees sampled in this study. Moreover, the Botryosphaeriaceae species identified during this STSM could represent a serious threat to the environment in other European countries and worldwide. The risk of spread or damage of these fungal species should be assessed in order to develop risk mitigation measures where appropriate.

Table 1. Botryosphaeriaceae species identified during this STSM

Botryosphaeriaceae species identity	Host	No. of sampled trees/shrubs	No. of isolates	Location
<i>Diplodia sapinea</i>	<i>Picea omorika</i> <i>Pseudotsuga menziessi</i> <i>Sequoiadendron giganteum</i> <i>Populus nigra</i> <i>Populus tremula</i>	2	3	Serbia
<i>Botryosphaeria dothidea</i>	<i>Salix caprea</i> <i>Taxus baccata</i> <i>Quercus cerris</i> <i>Chamaecyparis lawsoniana</i> <i>Juniperus horizontalis</i>	8	12	Serbia
<i>Dothiorella</i> sp.	<i>Cupressus sempervirens</i>	1	1	Serbia, Montenegro
<i>Dothiorella sarmentorum</i>	<i>Quercus rubra</i>	1	1	Serbia
<i>Neofusicoccum parvum</i>	<i>Populus nigra</i> <i>Aesculus hippocastanum</i> <i>Chamaecyparis lawsoniana</i>	3	9	Serbia
<i>Diplodia seriata</i>	<i>Salix caprea</i> <i>Prunus cerasus</i> <i>Cupressus sempervirens</i>	3	4	Serbia