

Table S1: Common pathogens causing root and butt rot on pines in European forest stands

Pathogen name	Country of detection	Host species	References
<i>Armillaria (Fr.) Staude</i>	Poland, Russia, Spain, United Kingdom	<i>Pinus</i> spp., <i>P. contorta</i> , <i>P. nigra</i> , <i>P. radiata</i> , <i>P. sylvestris</i>	1, 2, 3, 4, 5, 6
<i>Armillaria borealis</i> Marxm. & Korhonen	France, Switzerland	<i>P. mugo</i>	7
<i>Armillaria cepistipes</i> Velen.	Switzerland, Greece	<i>P. mugo</i> , <i>P. halepensis</i> , <i>P. sylvestris</i> , <i>Pinus nigra</i> , <i>Pinus pinaster</i>	7, 8
<i>Armillaria gallica</i> Marxm.	Greece	<i>P. halepensis</i> , <i>P. sylvestris</i> , <i>P. nigra</i> , <i>P. pinaster</i>	8, 9
<i>Armillaria mellea</i> (Vahl) P. Kumm.	Bulgaria, France, Germany, Greece, Lithuania, Ukraine	<i>P. sylvestris</i> , <i>P. cembra</i> , <i>P. monticola</i> , <i>P. mugo</i> , <i>P. nigra</i> , <i>P. pinaster</i> , <i>P. strobus</i> , <i>P. griffithii</i>	10, 11, 12, 13, 14, 15, 16
<i>Armillaria ostoyae</i> (Romagn.) Herink	France, Germany, Greece, Poland, Romania, Switzerland	<i>P. halepensis</i> , <i>P. sylvestris</i> , <i>P. mugo</i> , <i>P. nigra</i> , <i>P. pinaster</i>	8, 9, 17, 18, 19, 20, 21
<i>Armillaria tabescens</i> (Scop.) Emel	Greece	<i>P. nigra</i>	9
<i>Botryotinia fuckeliana</i> (de Bary) Whetzel	Ukraine	<i>P. sylvestris</i>	22
<i>Abortiporus borealis</i> (Fr.) Singer	Russia	<i>Pinus</i> spp.	23

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<i>Fomitopsis pinicola</i> (Sw.) P. Karst.	Russia, Spain, Ukraine	<i>Pinus</i> spp., <i>P. sylvestris</i>	6, 4, 22
<i>Fomitopsis officinalis</i> (Batsch) Bondartsev & Singer	Russia	<i>Pinus</i> spp.	23
<i>Fusarium compactum</i> (Wollenw.) W.L. Gordon	Israel	<i>P. brutia</i> , <i>P. canariensis</i> , <i>P. halepensis</i> , <i>P. maritima</i> , <i>P. pinea</i>	24
<i>Fusarium equiseti</i> (Corda) Sacc.	Israel	<i>P. pinea</i>	25
<i>Fusarium oxysporum</i> Schleld.	Lithuania, Spain, Ukraine	<i>P. radiata</i> , <i>P. pinaster</i> , <i>P. sylvestris</i> , <i>P. nigra</i> , <i>P. halepensis</i> , <i>P. mugo</i> ,	22, 26, 27
<i>Fusarium</i> Link	Germany	<i>P. sylvestris</i>	28
<i>Fusarium verticillioides</i> (Sacc.) Nirenberg	Spain	<i>P. sylvestris</i>	29
<i>Heterobasidion annosum</i> (Fr.) Bref.	Bulgaria, Finland, France, Germany, Greece, Italy, Ireland, Lithuania, Macedonia, Poland, Portugal, Romania, Russia, Spain, Switzerland, Ukraine, United	<i>Pinus</i> spp., <i>P. pinaster</i> , <i>Chamaecyparis lawsoniana</i> , <i>P. radiata</i> , <i>P. nigra</i> , <i>P. sylvestris</i> , <i>Pseudotsuga menziesii</i> , <i>Picea abies</i> , <i>P. halepensis</i> , <i>P. pinea</i> , <i>Pinus nigra larici</i> , <i>P. cembra</i> , <i>P. peuce</i> , <i>Pinus mugo</i> , <i>P. contorta</i>	30, 31, 32, 33, 34, 35, 36, 37, 11, 38, 39, 40, 41, 7, 20, 42, 43, 44, 45, 46, 1, 47, 48, 49, 50, 34, 10, 23, 51, 52, 53

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Kingdom			
<i>Heterobasidion irregulare</i> Garbelotto & Otrosina	Italy	<i>P. pinea</i>	54, 55
<i>Heterobasidion parviporum</i> Niemelä & Korhonen	Italy	<i>P. cembra</i>	35
<i>Heterobasidion</i> Bref.	Denmark, Poland, Sweden,	<i>P. sylvestris, P. contorta</i>	3, 56, 57, 58
<i>Onnia triquetter</i> (Pers.) Imazeki	Russia	<i>Pinus</i> spp.	59
<i>Pestalotia hartigii</i> Tubeuf	Ukraine	<i>P. sylvestris</i>	60
<i>Phaeolus schweinitzii</i> (Fr.) Pat.	Macedonia, Russia	<i>Pinus</i> spp., <i>P. peuce</i>	51, 23
<i>Phellinus pini</i> (Brot.) A. Ames	Romania, Russia, Spain, Ukraine	<i>Pinus</i> spp., <i>P. sylvestris</i>	4, 23, 61, 15
<i>Phellinus hartigii</i> (Allesch. & Schnabl) Pat.	Russia	<i>Pinus</i> spp.	23
<i>Phlebiopsis gigantea</i> (Fr.) Jülich	Romania	<i>P. nigra, P. sylvestris</i>	47

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<i>Pholiota adiposa</i> (Batsch) P. Kumm.	Russia	<i>Pinus</i> spp.	6
<i>Phoma macrostoma</i> Mont.	Ukraine	<i>P. sylvestris</i>	22
<i>Phomopsis</i> (Sacc.) Sacc.	Ukraine	<i>P. sylvestris</i>	22
<i>Phytophthora cactorum</i> (Lebert & Cohn) J. Schröt.	Germany	<i>P. ponderosa</i> , <i>P. strobus</i> , <i>P. sylvestris</i>	62, 63
<i>Phytophthora cinnamomi</i> Rands	Italy	<i>P. halepensis</i> , <i>P. pinaster</i> <i>P. pinea</i>	63
<i>Phytophthora cryptogea</i> Pethybr. & Laff.	Italy	<i>P. radiata</i>	64
<i>Phytophthora humicola</i> W.H. Ko & Ann	Italy	<i>P. pinea</i>	65
<i>Phytophthora plurivora</i> T. Jung & T.I. Burgess	Germany	<i>P. sylvestris</i>	66, 63
<i>Porodaedalea pini</i> (Brot.) Murrill	Poland	<i>P. sylvestris</i>	67
<i>Pythium</i> Pringsh.	Ukraine	<i>P. sylvestris</i>	60

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<i>Rhizina undulata</i> Fr.	Lithuania, Ukraine	<i>P. mugo, P. sylvestris</i>	68, 14, 69
<i>Rhizoctonia solani</i> J.G. Kühn	Ukraine	<i>P. sylvestris</i>	60
<i>Rhizosphaera kalkhoffii</i> Bubák	Ukraine	<i>P. sylvestris</i>	60
<i>Trichoderma viride</i> Pers.	Italy	<i>P. nigra</i>	70
<i>Truncatella hartigii</i> (Tubeuf) Steyaert	Ukraine	<i>P. sylvestris</i>	22

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