

Fungi Settling Seedlings of *Stewartia pseudocamelia* (Max.)

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Abstract

Stewartia pseudocamelia is one of more attractive of ornamental bushes. The main of decorative quality are: ornamental flowers, non-typical florescence (from end of June to August), original bark and attractive overcolouring of leaves in autumn season. Apart diseases affected *Stewartia* during vegetation period, the most dangerous are those which infest seedlings. The total number of 132 colonies of fungi were obtained from the sore seedlings of *Stewartia*. The isolates represented 19 species of thirteen genera. The most dominated of them were fungi of species: *Cladosporium cladosporioides*, *Cylindrocarpon radiculicola*, *Fusarium avenaceum* and *F. oxysporum*. These above-mentioned fungi together with: *Phytophthora cinnamomi*, *Botrytis cinerea*, *Penicillium* spp., *Alternaria alternata*, *Rhizoctonia solani* and *Pythium debaryanum* belonged to the group of dominants and consisted 79.02% of total community.

Keywords: fungi; seedlings; *Stewartia pseudocamelia*

INTRODUCTION

The crop of *Stewartia pseudocamelia* can be difficult, especially during the first years of life of plants. *Stewartia* does not like transplant, needs fresh, a little damp, humus and fertile and rather acidic soils (MURAS 1996; MURAS & TUMIŁOWICZ 1996).

In case of reproduction of *Stewartia pseudocamelia* from seeds, sprouts and seedlings can be destroyed by fungi occurred in the ground: *Phytophthora cinnamomi*, *Rhizoctonia solani* and fungi of genera *Fusarium* and *Pythium*. Pathogens, which are located in soil, can attack old plants, quicksets during taking – root and as well as perennial shrubs (ŁABANOWSKI *et al.* 2000).

The aim of study was isolated and determined fungi occurring seedlings of *Stewartia pseudocamelia* with symptoms of diseases.

MATERIAL AND METHODS

The material for investigation were seedlings of *Stewartia pseudocamelia* from the experiment conducted by Department of Ornamental Plants of Agriculture University of Cracow. Two-year studies were carried in laboratory of the Department of Plant

Protection. Seedlings of *Stewartia* with symptoms of disease were disinfected superficially: shaken for 1 min in absolute alcohol, rinsed in distilled sterile water for 5 min, placed in 7% H₂O₂ and shaken for 5 min, then rinsed thrice in distilled sterile water. Next, fragments of plants were dried on sterile blotting-paper, 0.5–1.0 cm in size slices were cut and placed in Petri dishes with solidified. First colonies of fungi obtained, after 24 hours were placed on PDA slants. Asplit was conducted for 7 days. On the basis isolates of pure cultures grew on the special medium, fungi were identified using of mycological keys and monographs (DOMSCH *et al.* 1980, GERLACH & NIRENBERG 1982; NELSON *et al.* 1983).

The fungi isolated were characterized by determining the dominant, i.e. those whose share in the isolations exceeded above 5%, influents 1–5%, and accessory species below 1% (KURZAWIŃSKA 1994).

RESULTS AND DISCUSSION

Until today there are no information in available literature in our country about healthiness of seedlings of *Stewartia pseudocamelia*. From the conducted experiment a total number of 132 colonies of fungi was

isolated from seedlings (with symptoms of disease) of *Stewartia pseudocamelia*. The isolates represented 19 species of 13 genera.

Fungi. *Cladosporium cladosporioides*, *Cylindrocarpon radiculicola*, *Fusarium avenaceum* and *Fusarium oxysporum* were the most numerous species. To the dominating group (79.02%) besides above-mentioned species, belonged: *Phytophthora cinnamomi*, *Botrytis cinerea*, *Penicillium* spp., *Alternaria alternata*, *Rhizoctonia solani* and *Pythium debaryanum* (Table 1).

Among all isolated fungi, these of *Phytophthora* genus (for example *Phytophthora cinnamomi*) is one of the most dangerous in plant of ornamental shrubs (ORLIKOWSKI 2000).

Besides of the fungi from *Phytophthora* genus, wilting and decay of ornamental, leafed shrubs can cause other

fungi: *Cylindrocarpon radiculicola*, *Fusarium avenaceum* and *Fusarium oxysporum* (WERNER 1998). According to this author, *Cylindrocarpon radiculicola* and *Fusarium avenaceum* affecting roots and root neck and *Fusarium oxysporum* destroying conductive wisps.

Fungi of: *Pythium*, *Fusarium*, *Rhizoctonia solani* genera cause rot of quicksets many ornamental, leafed shrubs (ŁABANOWSKI *et al.* 2000). Polyphagous fungus – *Botrytis cinerea* caused gray mould occur on many ornamental shrubs (ŁABANOWSKI *et al.* 2000).

To the influents group (19.8%) belonged: *Trichoderma viride*, *Trichoderma piluliferum*, *Phytophthora cryptogea*, *Aspergillus* spp., *Gilmaniella humicola*, *Pythium ultimum* and *Phoma* spp. (Table 1).

According to ŁABANOWSKI *et al.* (2000), the main pathogens of ornamental, leafed shrubs are fungi from

Table 1. Species of fungi isolated from *Stewartia pseudocamelia*

Species	Year				Mean		Group of frequency
	2000		2001				
	number	(%)	number	(%)	number	(%)	
<i>Cladosporium cladosporioides</i> (Fres) de Vries	11	13.09	5	10.42	8	11.76	Dominants 79.02%
<i>Cylindrocarpon radiculicola</i> Wollenweber	8	9.52	6	12.50	7	11.01	
<i>Fusarium avenaceum</i> (Cordaex Fr.) Sacc.	6	7.14	5	10.42	5.5	8.78	
<i>Fusarium oxysporum</i> Schlecht.	6	7.14	5	10.42	5.5	8.78	
<i>Phytophthora cinnamomi</i> Rands	6	7.14	4	8.33	5	7.74	
<i>Botrytis cinerea</i> Pers.ex Nocca	5	5.96	4	8.33	4.5	7.14	
<i>Penicillium</i> spp.	4	4.76	4	8.33	4	6.54	
<i>Alternaria alternata</i> (Fr.) Keissler	5	5.96	3	6.25	4	6.10	
<i>Rhizoctonia solani</i> Kühn	5	5.96	3	6.25	4	6.10	
<i>Pythium debaryanum</i> Hesse	5	5.96	2	4.17	3.5	5.07	Influents 19.80%
<i>Trichoderma viride</i> Pers ex.Gray	4	4.76	2	4.17	3	4.47	
<i>Phytophthora cryptogea</i> Pethybr. et Laff.	2	2.38	2	4.17	2	3.28	
<i>Trichoderma piluliferum</i> Webster & Rifai	2	2.38	2	4.17	2	3.28	
<i>Aspergillus</i> spp.	4	4.76	0	0	2	2.38	
<i>Gilmaniella humicola</i> Barron	4	4.76	0	0	2	2.38	
<i>Pythium ultimum</i> Trow	2	2.38	1	2.07	1.5	2.23	
<i>Phoma</i> spp.	3	3.57	0	0	1.5	1.78	
<i>Fusarium lateritum</i> Ness ex Link	1	1.19	0	0	0.5	0.59	
<i>Fusarium poae</i> (Peck) Wollen.	1	1.19	0	0	0.5	0.59	
Total	84	100	48	100	66	100	

Phytophthora (*Phytophthora cryptogea*) and *Pythium* (*Pythium ultimum*) genus.

Fusarium lateritum and *Fusarium poae* isolated from diseased seedlings of *Stewartia pseudocamelia* belonged to the accessorizing group. Their participation constituted 0.6% (each of them) of total isolates (Table 1).

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