

MICROMYCETES ROSSICAE: CHOROLOGICAL AND TAXONOMICAL NOTES.

5. *PSEUDOCERCOSPORELLA FILIPENDULAE* (MYCOSPHAERELLALES, ASCOMYCOTA) – NEW FIND FOR SAINT PETERSBURG (RUSSIA)

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The present report continues the series devoted to rare and interesting species of microfungi from various regions of Russia that cause rust, shoot deformations or leaf spots, and highlights *Pseudocercospora filipendulae* (Mycosphaerellales, Ascomycota), a rare species new to Saint Petersburg City (Russia). The morphology of the species was repeatedly studied, emphasizing the conidia variability. This note gives further information on the distribution of the species in Russia, as well as the size of its conidia.

Keywords: cercosporoid fungi, conidia variability, *Filipendula*, leaf spots, *Mycosphaerellaceae*

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The present report continues a series devoted to rare and interesting species of microfungi of various regions of Russia that cause rust, shoot deformations or leaf spots (Zmitrovich et al., 2020a, 2020b; Dudka, Zmitrovich, 2020, 2021) and highlights a less known representative of the genus *Pseudocercospora*.

The genus *Pseudocercospora* was described by Deighton (1973) for phytopathogenic, leaf spots-forming cercosporoid fungi with colorless/pale hyphae, well-developed to reduced (mostly hyaline) stromata, semi-micronematous to macronematous, simple, rarely branched, straight and subcylindric to geniculate-sinuous, continuous (reduced to a single conidiogenous cell) or septate, solitary to fasciculate conidiophores forming flat, crustose to subglobose sporodochial conidiomata, separate or integrated, terminal, monoblastic, determinate to polyblastic, sympodial, indeterminate conidiogenous cells (conidiophores reduced to a single conidiogenous cell), and inconspicuous, thin-walled, hyaline, not darkened, subcylindrical, filiform or somewhat obclavate, euseptate, usually multiseptate, conidia of schizolytic separation pattern.

In light of molecular data, the genus appears to be polyphyletic (Frank et al., 2010), and not every species described so far have been verified molecularly. A number of species are known from scarce finds. In this notice, we focus on *Pseudocercospora filipendulae*, previously known from two finds in Russia.

This taxon was originally described as *Cercospora laxipes* f. *filipendulae* by Mel'nik (1966) based on some differences from f. *laxipes* in conidia size and substrate specialization ("Ad forma *laxipes* sporulis minutibus (28–60 × 3–4 μm) et hospitis *Filipendula ulmaria* (L.)

Maxim differ", *ibid.*). The type specimen was collected in the Russian Soviet Federative Socialist Republic (R.S.F.S.R.), Leningrad Region (Tosnensky district, near Lisino-Korpus village), in a swamp spruce forest of, on fresh leaves of *Filipendula ulmaria*. Later, Braun and Mel'nik (2008) raised the rank of this taxon to species and placed it in the genus *Pseudocercospora*, based on the morphological concept of the genus. Also, these authors have presented the second find of *Pseudocercospora filipendulae* from the Pskov region of Russia (Pechersky district, near Livimae station, also on living leaves of *Filipendula ulmaria*). We found this rare species in September 2022 in Saint Petersburg City (Pushkin, Babolovsky Park) on the same host. This is its third find in Russia; the new material collected broadens the understanding of the range of variability of the species' microstructures.

Macroscopic photographs were done using a Nikon D80 camera with AF Micro Nikkor 60 mm lens. Micromorphological analysis of lesions was performed using a Zeiss AxioImager.A1 light microscope. Micro-preparations were mounted in distilled water or a 5% KOH solution. The sizes of conidiophores and conidia were measured in 40–60 times random replicates in water. The variability of conidia was assessed according to the methods proposed by Parmasto et al. (1987).

Pseudocercospora filipendulae (Melnik) U. Braun et Melnik, Mikol. Fitopatol. 42 (4): 305, 2008. — *Cercospora laxipes* J.J. Davis f. *filipendulae* Melnik, Novit. Syst. Pl. non Vasc. 3: 218, 1966.

Description. Colonies hypophyllous, effuse, arachnoid or patches-forming, whitish-gray. Mycelium both



Fig. 1. Symptoms caused by *Pseudocercospora filipendulae* on *Filipendula ulmaria* (LE 287681): a – the upper leaf surface; b – the lower leaf surface. Scale bar – 1 cm.

internal and external. Vegetative hyphae septate, branched, hyaline, smooth, varies in diameter as:

	Mel'nik (1966)	Braun, Mel'nik (2008)	current data
	2.5–3 μm^1	1.5–3.5 μm	(1.0) 1.5–4.0 (4.5) μm
Stromata absent or reduced to slightly swollen basal cells. Conidiophores arising on superficial or substomatal mycelium, solitary or loose fasciculate, unbranched, more or less erect, straight or geniculate, cylindrical, 0–1-septate, with 1–3 conidiogenous loci. Conidia solitary, obclavate to hyphoid or filiform, sometimes sublunate, hyaline, thin-walled, smooth, (0) 1–10-septate, varying in their sizes as:			
	Mel'nik (1966)	Braun, Mel'nik (2008)	current data
length $\times$ diameter in medial part	28–60 $\times$ 3–4 μm	(10) 25–70 (85) μm	(14) 22–60 (82) μm
diameter at the base	1–2 μm^2	1–1.5 μm	(0.5) 1–1.5 (2.0) μm

Symptoms. Leaf spots amphigenous, necrotic, diffuse to angular, 0.2–1.5 mm in diam., sometimes confluent in clusters up to 4 mm in diam., on the upper leaf surface first rose-red, then cinnamon-brown, on the lower leaf surface cinnamon-brown, sometimes with yellowish areolation.

Hosts. Only one host is known so far, namely *Filipendula ulmaria* (Rosaceae).

Distribution range. Russia: Leningrad Region, Pskov Region, Saint Petersburg.

Material examined: R.S.F.S.R., Leningrad Region, Tosno Rayon, Lisino-Korpus, 08.08.1963, on *F. ulmaria*, leg. et det. V.A. Mel'nik (LE 40409, holotype of *Cercospora laxipes* f. *filipendulae*). – Russia, Pskov Region, Pechery Rayon, Livimae, 11.08.2007, on *F. ulmaria*, leg. G.Yu. Konechnaya, det. V.A. Mel'nik

(LE 232213). – Russia, Saint Petersburg, Pushkin, Babolovsky Park, 25.09.2022, on *F. ulmaria*, leg. et det. I.V. Zmitrovich (LE 287681).

In other countries, according to our data, this species has not been recorded till now. It is possible that, like all members of the genus, this species is host-specific. North American *Pseudocercospora crataegi* is morphologically close to *P. filipendulae*, however, is distinguished by the regular formation of well-developed conidiophore fascicles, emerging through stomata, as well as larger conidia, reaching 120 $\times$ 5 μm and having up to 12 septa (Braun, 1995).

For all known localities, the host plant *Filipendula ulmaria* is a species of native flora. It is a species gravi-

¹ Calculated basing on scale-bar in the Figure 3 (Mel'nik, 1966).
² See footnote 1.

tating toward more or less aerated wetlands on black woody peat. In Saint Petersburg, the habitat is located in the undrained part of a park with vegetation in its natural dynamic phase (birch-alder swamp forest). All known finds of the pathogen are located in the southern taiga subzone, no material has been yet obtained from the middle taiga subzone.

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Микромицеты России: географические и таксономические заметки.

5. *Pseudocercospora filipendulae* (*Mycosphaerellales*, *Ascomycota*) — новая находка для Санкт-Петербурга (Россия)

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Сообщение продолжает серию по редким и интересным видам фитопатогенных микромицетов и посвящено *Pseudocercospora filipendulae* (*Mycosphaerellales*, *Ascomycota*) — редкому виду, впервые обнаруженному в г. Санкт-Петербурге (Россия). Продолжено изучение морфологических особенностей вида, в частности, вариабельность размеров конидий.

Ключевые слова: изменчивость конидий, листовые пятнистости, церкоспороидные грибы, *Filipendula*, *Mycosphaerellaceae*