
Passalora circumscissa (Sacc.) U. Braun in Lithuania

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Results of investigation of pathogenic micromycete *Passalora circumscissa* (Sacc.) U. Braun from cultivated and wild stone-fruit trees in different regions of Lithuania are presented. The original data on measurements of conidiophores and conidia, the exact localities, disease intensity and some aspects of fungus biology are described.

Key words: *Passalora circumscissa*, brown leaf spot, stone-fruit trees, Lithuania

INTRODUCTION

Passalora circumscissa (Sacc.) U. Braun (*Cercospora circumscissa* Sacc., *C. cerasella* Sacc.) belongs to the class *Hyphomycetes*, family *Dematiaceae*. According to the modern classification, the genus *Passalora* belongs to the group of cercosporoid fungi [1]. This plant pathogen causes brown leaf spot of various stone-fruit trees. Its teleomorph is reported to be *Mycosphaerella cerasella* Aderhold. Investigations on the distribution, morphology and biology of *P. circumscissa* up till now have been carried out in France, Germany, Israel, Italy and the United States by W. A. Jenkins, S. Little [2]. Various *Cerasus* Juss. and *Prunus* L. species and cultivars affected by this fungus may be completely defoliated by the beginning of summer. According to A. Szejnberg [2], premature defoliation may stimulate new growth (e.g., flowering and development of new leaves) in autumn, which causes a further debilitation of tree vigor.

P. circumscissa was detected for the first time in Lithuania in 1995, when detailed investigations of cercosporoid fungi were started [3]. Although there are no very big cherry-tree or plum-tree gardens in this country, the climatic and meteorological conditions for development and distribution of the pathogen are favourable. Therefore in some years the fungus can cause great damage in private gardens or stations of cultivar investigations of Lithuania too.

The purpose of the present work was to investigate the distribution of the pathogenic micromycete

P. circumscissa, its host plants and disease intensity in Lithuania.

MATERIALS AND METHODS

The herbarium specimens were collected in different regions of Lithuania in 1992–1999. The fungus was identified according to external symptoms of the disease, size of conidia and conidiophores referring to the monographs [1, 2, 4–6]. For identification, at least 50 conidiophores and conidia of each specimen were measured. The host plants were identified according to the “Lietuvos TSR Flora” [7], disease intensity was evaluated following the methods of J. M. Waller et al. [8].

The herbarium specimens are deposited in the Herbarium of the Institute of Botany, Vilnius (BILAS) and at the Lithuanian Institute of Horticulture.

RESULTS AND DISCUSSION

Passalora circumscissa (Sacc.) U. Braun, Mycotaxon, **55**: 230. 1995; *Cercospora circumscissa* Sacc., N. Giorn. Bot. Italy, **8**: 189. 1876; *C. cerasella* Sacc., Michelia, **1**:266. 1879; *C. cerasella* var. *avium* Roum., Rev. Mycol., **18**: 71. 1896; *C. padi* var. *mahaleb* Unam., Bol. Soc. Espan. Hist. Nat. Madrid, **35**: 435. 1935; *C. padi* Bubak & Serebriankov, Hedvigia, **52**: 271. 1912; *C. pruni-persicae* Sawada, Spec. Publ. 8, Coll. Agric. Nat. Taiwan Univ., **11**: 215. 1959;

Pseudocercospora circumscissa (Sacc.) Y.-L. Guo & X.-J. Liu, *Mycosystema*, 2: 225–240. 1989.

The teleomorph is reported as *Mycosphaerella cerasella* Aderhold, *Ber. Deutsch. Bot. Ges.* 18: 246. 1900.

Leaf spots circular, 4–5 mm diameter, reddish brown at first. Later the central portion becomes light brown with brownish red edges. Sometimes the necrotic tissue drops out, leaving shot-hole symptoms. Lesions may coalesce to form large necrotic areas and can develop on both leaf surfaces. Conidiophores pale brown to brown, one- to two-septate and geniculate on the underside of leaf, 20–85 × 3–5 μm. Conidia initially hyaline, becoming olivaceous with maturity, obclavate, base elongated obconic, straight to slightly curved, mostly three- to six-septate (rare one- to twelve-septate), 20–145 × 3–5.6 μm (Fig.1). Our data on measurements of conidiophores and conidia did not differ from those referred by A. Szejnberg [2], M. B. Ellis [4], C. Chupp [5], N. I. Vassiljevskij and B. P. Karakulin [6].

Ten localities of the pathogen were recorded in different regions of Lithuania (Fig. 2).

On *Cerasus avium* (L.) Moench, Vilnius district, Nemenčinė area, edge of a mixed forest, 12 July 1995 (leg. B. Grigaliūnaitė). Plants strongly injured, leaf surface damaged 40%.

On *Cerasus avium* (L.) Moench ‘Zaslonovskaja’ and ‘Hedelfinger’, Plungė district, Rietavas station of cultivar investigation, 20 August 1996 (leg. A. Valiuškaitė). Lesions single.

On *Cerasus vulgaris* Mill., Kaunas district, Mūniškės, Kaunas station of cultivar investigation, 17 July 1996; Kaunas district, Babtai, gardens of Lithuanian Institute of Horticulture, 17 July, 1996; Mažeikiai, private garden, 20 August 1996; Naujoji Akmenė, private garden, 20 August 1996; Šilalė district, Kaltinėnai, private garden, 20 August, 1996 (leg. A. Valiuškaitė). Lesions single. Vilnius, Sudervė cemetery, 22 August 1999 (leg. S. Stakvilevičienė). Lesions single. Single plants injured, leaf surface damaged 2%.

On *Cerasus vulgaris* Mill. ‘Vytėnų žvaigždė’

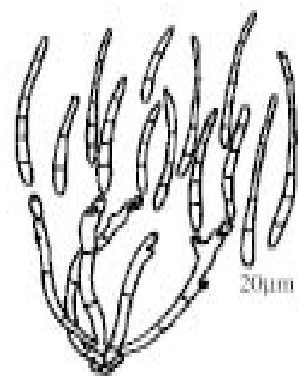


Fig. 1. *Passalora circumscissa* conidiophores and conidia

and ‘North Star’, Plungė district, Rietavas station of cultivar investigation, 20 August 1996 (leg. A. Valiuškaitė). Lesions single.

On *Prunus domestica* L., ‘Orija’ and ‘Gynė’, Plungė district, Rietavas station of cultivar investigation, 20 August 1996 (leg. A. Valiuškaitė). Lesions single.

General distribution: Europe, Asia, North America, South Africa.

According to A. Szejnberg [2], *P. circumscissa* overwinters as substomatal stroma in infected fallen leaves. In the spring, characteristic conidiophores and conidia of the pathogen develop from substomatal stromata (conidia are the primary source of inoculum). Conidia are disseminated by wind. Our investigations have revealed that high humidity (rain and

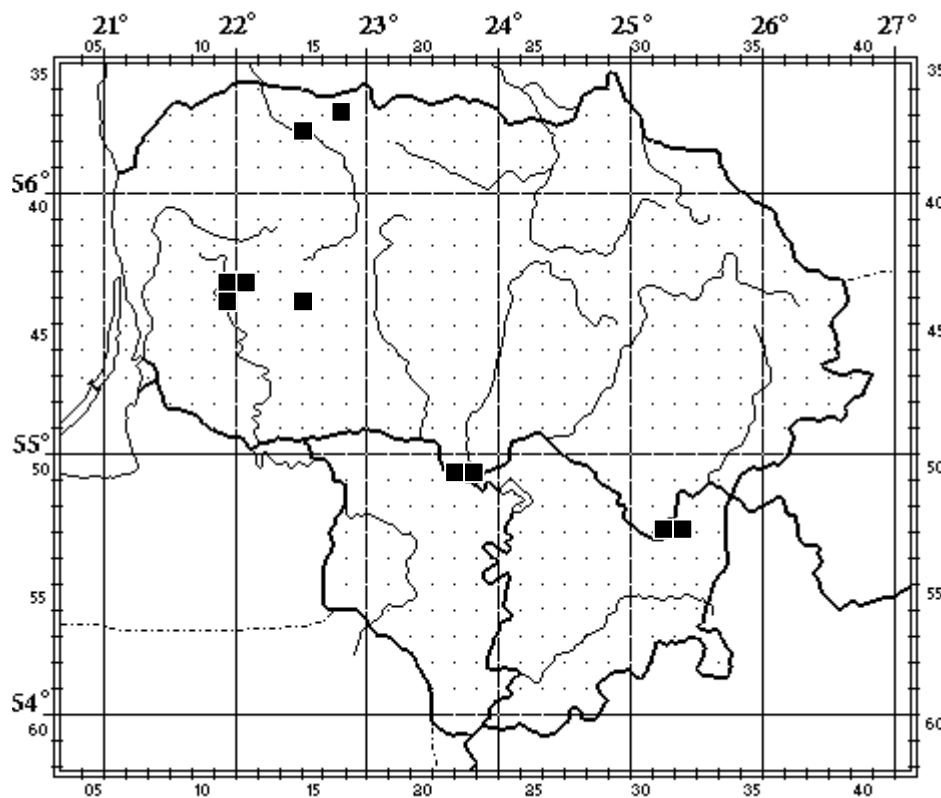


Fig. 2. Distribution of *Passalora circumscissa* in Lithuania

dew), temperature are favourable for development of the fungus in Lithuania. Wet summers of 1995, 1996 were more favourable to the distribution of brown leaf spot on leaves of stone-fruit trees in our country. The highest percentage of germinated conidia of *P. circumscissa* and other cercosporoid fungus was observed at a temperature of 20–25 °C [9].

Control of brown leaf spot is based on the use of fungicides. According to literature data, the growth and development of cercosporoid fungus is most effectively inhibited by preparations of copper group. The influence of various fungicides on some cercosporoid fungi was investigated. Most effective against cercosporoid fungi were 2% Bordeaux, 0.2% Spartak and 1% Burgund solutions. The results of the experiment proved that using 0.5% and 1% Bordeaux solution, damaged plants should be repeatedly sprayed in a fortnight. Practices that reduce the amount of infected leaf debris in the orchard will significantly decrease the primary source of inoculum in the spring. A. Szejnberg [2] refers that three to four applications of benomyl, thiabendazole, maneb, or zineb applied at monthly intervals or sometimes more often, beginning at early stages of leaf burst, are effective.

Our investigations proved that *P. circumscissa* is a spreading pathogen of stone-fruit trees in Lithuania. At present it is detected in various regions of our country more frequently. The data of investigations allow to conclude that the fungus might be distributed all over the country. Further investigations on the distribution and biology of this fungus, the resistance of sour and sweet cherry-trees, plum-trees to this pathogen, determination of most effective control measures remain very important to Lithuania. There is not enough data on the teleomorph (*Mycosphaerella cerasella*) of this fungus, either.

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PASSALORA CIRCUMSCISSA (SACC.) U. BRAUN LIETUVOJE

S a n t r a u k a

Straipsnyje pateikti 1992–1999 m. tyrimų duomenys apie kaulavaisinių augalų lapų rudmargės sukėlėjo *Passalora circumscissa* (Saac.) U. Braun paplitimą įvairiuose Lietuvos regionuose. Konstatuota 10 šio patogeninio mikromiceto radimviečių. Nustatyta, kad rudmargės sukėlėjas pažeidžia įvairių *Cerasus* Juss. ir *Prunus* L. genčių rūšių bei veislių lapus. Straipsnyje aprašyti ligos simptomai, pateikti originalūs grybo konidijų ir konidijakočių matavimų duomenys. Nurodomas vyšnių, tręšnių ir slyvų lapų pažeidimo intensyvumas bei svarbesnės apsaugos priemonės.