First Report of Powdery Mildew on *Caragana arborescens* in Minnesota and North Dakota Caused by *Microsphaera* (*Erysiphe*) *palczewskii*

Dean A. Glawe, Plant Pathologist, Department of Plant Pathology, Puyallup Research and Extension Center, 7612 Pioneer Way East, Washington State University, Puyallup 98371-4998; Robert W. Stack, Professor, and James A. Walla, Research Associate, Department of Plant Pathology, Walster Hall, PO Box 5012, North Dakota State University, Fargo 58105

Corresponding author: Dean A. Glawe. glawe@wsu.edu


While collecting Erysiphales in North Dakota and Minnesota during the growing season of 2005, the authors encountered a powdery mildew disease of *Caragana arborescens* Lam. (Siberian pea tree) previously unreported from these states. The causal agent was determined to be *Microsphaera palczewskii* Jacz. This report documents for the first time the presence of *M. palczewskii* in North America east of the Rocky Mountains and includes information on the morphology, classification, and distribution of this species.

Collections from diseased plants were made at three sites, one each in Bismarck, ND, Fargo, ND, and near Badoura, MN. Signs of the pathogen on leaf surfaces included effuse to dense patches of white to grayish-brown mycelia that produced large numbers of chasmothecia (Fig. 1). The fungus formed superficial hyphae with lobed appressoria. Anamorphic material in the specimens collected was sparse, but observed conidiophores bore single, hyaline conidia that were short-cylindrical to barrel-shaped, lacked fibrosin bodies, and measured 26.5-32 \( \times \) 11-15.5 \( \mu \text{m} \). Chasmothecia (Fig. 2) were dark brown to black, convex, (95-) 100-130 (-150) \( \mu \text{m} \) in diameter, produced dichotomously-branched chasmothecial appendages (Fig. 3) measuring (145-) 175-275 (-290) \( \times \) (5-) 6-9 (-11) \( \mu \text{m} \), and contained multiple asci that were short-stipitate to saccate and (46.5-) 51-67 (-68.5) \( \times \) (27-) 29-46 (-47.5) \( \mu \text{m} \). Ascii contained 6 to 8 ovoid, pale yellowish ascospores (Fig. 4) measuring (17-) 17.5-23 (-23.5) \( \times \) (9.5-) 10-13.5 (-15.5) \( \mu \text{m} \). Voucher specimens were deposited with the Mycological Herbarium of the Department of Plant Pathology at Washington State University (WSP).
Morphological characteristics and host fit the description for *M. palczewskii* (1), also designated *Erysiphe palczewskii* U. Braun & S. Takamatsu. Originally described in 1927 from the Russian Far East, the fungus is now widespread in Eastern Europe (3). In North America, the fungus first was reported in 2003 (4) from *C. arborescens* in northern Idaho and eastern Washington. In 2005, the known range of the fungus in North America was reported (2) to include Alaska where it was found on *C. arborescens* and *C. grandiflora* DC [*see Erratum*].

The present account appears to be the first report of the fungus from North America east of the Rocky Mountain Range. The Bismarck, ND and Badoura, MN collection sites (the extreme western and eastern sites, respectively) are separated by a distance of about 480 km. Finding the fungus at several sites separated by a substantial distance, and the lack of geographical barriers such as significant mountain ranges in interior North America, suggests that the fungus ultimately may be found to occur widely on *Caragana* species in central and possibly eastern North America.

It appears likely that this fungus was introduced into North America rather recently, as is the case in Europe (2,3). The distinctive chasmothecial appendages and host genus make it unlikely that this fungus was misdetermined by past workers (2). Discovery of the fungus at widely separated locations in North America, now including Alaska, Idaho, Minnesota, North Dakota, and Washington, suggests that the fungus is now widely established in this continent. Further information will be required to determine the means and route or routes by which this fungus entered North America and became disseminated.

**Literature Cited**


**Erratum**

A correction was made to this sentence on February 9, 2006. Due to a web production error, the sentence previously had named the wrong state.