Additions to the leaf pathogenic fungi of Turkey

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Abstract

Septoria ornithogali on living leaves of *Ornithogalum* sp. and *Phyllosticta onosmae* on living leaves of *Onosma tauricum* var. *tauricum* are reported as new to the mycota of Turkey. Distinguishing morphological characters are described and illustrated for each species.

Key words – microfungi – *Phyllosticta onosmae* – *Septoria ornithogali*

Introduction

The asexual morph genus *Septoria* Sacc. includes plant parasitic fungi causing diseases on a great number of cultivated and wild plants. They most frequently attack the leaves, seldom the flowers of plants, evoking the appearance of necrotic spots. These damages affect the vitality and biological productivity of the attacked plants. The *Septoria* species include economically important plant pathogens, parasitizing on cereals, grasses, vegetables, ornamental plants, medicinal plants, forest trees and shrubs (Bacigálová et al. 2010).

Phyllosticta Pers. is an important coelomycetous plant pathogenic genus known to cause leaf spots and various fruit diseases worldwide on a large range of hosts. Species recognition in *Phyllosticta* has historically been based on morphology, culture characters and host association. Although there have been several taxonomic revisions and enumerations of species, there is still considerable confusion when identifying taxa (Wikee et al. 2011).

Materials & Methods

Plant specimens infected with microfungi were collected from Kaman district in Kırşehir Province of Turkey and prepared according to established herbarium techniques. Host plants were identified using the Flora of Turkey and East Aegean Islands (Davis et al. 1978, 1984). The fungal specimens were examined microscopically by thin sections. Microscopic examination and microphotographs were done using a Leica DM E light microscope. A Leica EZ4D stereo microscope was used for close-up photographs of the pycnidia on the leaf surface. The microfungi were identified using the relevant literature (Saccardo 1884, Byzova et al. 1967, Teterevnikova-Babayana 1987, Vanev et al. 1997). All specimens examined were deposited in the mycological collection of the Department of Biology, Arts and Sciences Faculty, Ahi Evran University, in Kırşehir Province of Turkey.

For scanning electron microscopy (SEM), 8–10 mm-square pieces of infected leaves bearing conidia and/or pycnidia were mounted on the SEM stubs with double-sided adhesive tape.

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They were coated with gold using a Polaron SC 502 Sputter Coater and were examined with a Jeol JSM 6060 scanning electron microscope operated at 5-10 kV in the Electron Microscopy Unit, Faculty of Science, Gazi University (Turkey).

Results

Septoria ornithogali Pass.

Fig. 1

Spots visible on upper leaf surface, oblong to irregular, 9–13 mm long, ochraceous. Conidiomata pycnidial, epiphyllous, immersed, becoming erumpent, globose, unilocular, 115–138 μm in diameter, brown; ostiole subcircular to irregular, 20–40 μm in diameter. Conidia cylindrical, fusiform, attenuate both ends, straight to slightly curved, $40\text{--}50 \times 2.2\text{--}3.5 \mu\text{m}$, 1–3-septate, usually 3-septate, not constricted, hyaline.

Material examined – Turkey, Kırşehir, Kaman, Tatık village, around Kızdere area, on living leaves of *Ornithogalum* sp., 26 May 2012, 1059 m alt., M. Erdoğan 2181.

Fig. 1 – *Septoria ornithogali*. A, General appearance of infected leaf. B, Conidia. C, Pycnidia on leaf (SEM). D, Conidia (SEM).

Phyllosticta onosmae Vasyag

Fig. 2

Spots orbicular or oblong, 1–2 mm in diameter, white, spot margin brown. Conidiomata pycnidial, epiphyllous, semi-immersed, globose, unilocular, thin-walled, 140–170 μm in diameter, dark brown; ostiole subcircular to irregular, 25–30 μm in diameter. Conidia 1-celled, elliptic, oblong, obtuse both ends, $5.5\text{--}7 \times 2.5\text{--}3 \mu\text{m}$, hyaline.

Material examined – Turkey, Kırşehir, Kaman, Tatık village, around Kızdere area, on living leaves of *Onosma tauricum* var. *tauricum* Pallas ex Willd, 27 May 2012, 1070 m alt., M. Erdoğan 2185.

Fig. 2 – *Phyllosticta onosmae*. A, Conidia. B, Conidia (SEM). C, Conidium (SEM).

Discussion

The genus *Septoria* is one of the largest genera of plant pathogens, causing a range of disease symptoms including leaf and fruit spots in many agricultural crops, as well as horticultural and native plants (Holliday 1989). *Septoria ornithogalea* Sacc., *S. ornithogali* Pass. and *S. ornithogalicola* Hollós have been recorded on *Ornithogalum* spp. (Saccardo 1884). *Septoria ornithogali* infects *Ornithogalum comosum* L. in Bulgaria (Vanev et al. 1997), *O. lacteum* Jacq. in Southern Africa (Doidge 1950), *O. magnum* Krasch. & Schischk. in Armenia (Simonyan 1981), *O. montanum* Cirillo in Bulgaria (Vanev et al. 1997), *O. nutans* L. in Greece (Pantidou 1973), *O. platyphyllum* Boiss. and *O. pyrenaicum* L. in Armenia (Simonyan 1981), *O. umbellatum* L. in Bulgaria (Vanev et al. 1997), USA (Anonymous 1960), Romania (Radulescu et al. 1973). Eighty-two species of *Septoria* are now known from Turkey (Selçuk et al. 2009, Ekici et al. 2012, Kabaktepe et al. 2013). *Septoria ornithogali* is reported for the first time from Turkey.

The genus *Phyllosticta* includes a diversity of pathogenic and endophytic species associated with plants worldwide (van der Aa & Vanev 2002). *Phyllosticta onosmae* is the only species of *Phyllosticta* described on *Onosma* sp. The morphological characters of our specimens agree with the previous record of this species. *Phyllosticta onosmae* infects *Onosma simplicissimum* L. in Kazakhstan (Byzova et al. 1967). *Phyllosticta onosmae* is new for mycoflora of Turkey.

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