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Ascochyta sojina sp. nov., a new pathogen on *Glycine max* (L.) Merr.

Ascochyta sojina sp. nov., ein neues Pathogen an *Glycine max* (L.) Merr.

Abstract

Ascochyta sojina sp. nov., a new species collected on *Glycine max* (L.) Merr., differs from other species of *Ascochyta* on this host in the diameter of the pycnidia and in length and width of the conidia.

Key words: *Ascochyta sojina* sp. nov., *Glycine max*, symptoms, systematics, new species

Zusammenfassung

Ascochyta sojina sp. nov., eine neue Art an *Glycine max* (L.) Merr., unterscheidet sich von anderen Arten der Gattung *Ascochyta* auf diesem Wirt im Durchmesser der Pyknidien und in Länge und Breite der Konidien.

Stichwörter: *Ascochyta sojina* sp. nov., *Glycine max*, Symptome, Systematik, neue Art

Introduction

On soybean (*Glycine* spp.) we know four different species of *Ascochyta*, as there are *A. sojae* Miura, *A. sojicola* Abramov, *A. pisi* Lib. and *A. phaseolorum* Sacc. On leaves of *Glycine max* originating from a field at Bad Wimsbach in Upper Austria an *Ascochyta* species was identified which differs in the diameter of the pycnidia, length and width of conidia to the well-known species on *Glycine* spp.

Methods

For the determination of the fungus the usual mycological routine methods of light microscopy were adopted. Pycinidia and conidia of the fungus were stained with Wittmann's Blue (Wittmann, 1970). Both have been measured using the programme labSense by Olympus.

Results

The conidia of the new species differ in length and width from the above mentioned four species. In some cases the diameters of the pycnidia of *A. sojina* also deviate from other *Ascochyta* species on soybean (Tab. 1). In addition to the four so far known species Nelen described *Ascochyta sojicola* on soybean (Nelen, 1977), referring to a publication by Abramov (Abramov, 1938) where *Ascochyta sojicola* is only mentioned without a description by the author. This neglects the original description by Abramov (Abramov, 1931), also transliterated as Abramoff or Abramow. Nelen's fungus is therefore regarded as homonym and a nomen superfluum.

Kövics et al. (1999) transferred *A. sojicola* Abramov to the genus *Phoma*, because the observed conidia were mostly aseptate.

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Tab. 1. On *Glycine* spp. up to now described species of *Ascochyta* (in chronological order) according to the original descriptions

Species	Host	Synonyms and remarks	Diameter of pycnidia in µm	Length of conidia in µm	Width of conidia in µm	Characteristics of the conidia
Ascochyta pisi Lib. (1830)	*Phaseolus*, *Pisum*, *Cicer*	In the literature *Glycine* spp. mentioned as host too.	up to 200 (250)[1)]	14–16 10–19[1)]	4–6 2.5–4.5(5)[1)]	Oblong with 1 septum, in the midth constricted, hyaline
Ascochyta phaseolorum Sacc. (1878)	*Phaseolus vulgaris*	In the literature *Glycine* spp. mentioned as host too. Current name: *Boeremia exigua* (Desm.) Aveskamp, Gruyter & Verkley (2010)	100 75–200[1)]	10 6–12[1)]	3 2.5–4[1)]	
Ascochyta sojae Miura (1928)	*Glycine soja* (= *G. max*)		90–120	12–18	4–4.5	
Ascochyta sojicola (as *sojaecola*) Abramov (1931)	*Glycine hispida* (= *G. max*)	Current name: *Phoma sojicola* (Abramov) Kövics et al. (1999)	90–220	8–11	3–5	
Ascochta sojicola Nelen (1977)	*Glycine hispida* (= *G. max*)	Illegitim, homonym of *Ascochyta sojicola* Abramov (1931) and nomen superfluum	80–160 mostly 95–115	6.5–14	3.5	

[1)] according to the description in Mel'nik (2000)

An additional species of *Ascochyta* on soybean, *Ascochyta glycines* Miura, only occurred in a list in Japan, not including the protologue (Guo, 2014). *Ascochyta glycines* was also reported (in Chinese) in: Flora of Gansu Economic Diseases, 282, 2002 (Guo, 2014). Symptoms are described as "Leaf spots circular, ellipsoid, at first brown, latter centre grayish white, margin brown, zonate and forming perforation, fusiform on stem and circular or irregular on seeds. Pycnidia globose or subglobose, brown, 102.8–134.2 µm diam. Conidia cylindrical, hyaline, rounded on ends, 1-septate, 4.2–10 × 2.3–4.2 µm".

Bai (2003) considered that *Ascochyta glycines* was a synonym of *Ascochyta sojae* (pycinida 95–150 µm, conidia 6–13 × 2–3.5 µm) and *Ascochyta glycines* was a nom. inval. The dimensions of pycnidia and conidia differ among each other and from *Ascochyta sojae* Miura (Miura, 1928).

The dimensions of pycnidia and conidia of *Ascochyta glycines* Miura are comparable with the *Ascochyta* species found in Austria and not with *Ascochyta sojae* Miura.

The diameter of the pycnidia of the new species varies from 47.45–180.77 µm with an average of 109.29 µm. The ostioles measure 6.52–23.18 µm (average 14.75 µm). The conidia are 4.78–11.33 µm long (average 8.39 µm) and 1.53–3.76 µm wide (average 2.38 µm) and show one septum in the midth of the conidia.

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On leaves dark brown roundish or irregular shaped spots (Fig. 1). On stalks the spots are oblong-oval, dark brown surrounded, somewhat immerged (Fig. 2). Conidiomata (pycnidia) on the upper side of the leaf spots (Fig. 3). Pycnidia semi-immersed, dark brown, globose, 47.45–180.77 µm diameter (average 109.29 µm) (s. Fig. 4). The ostioles measure 6.52–23.18 µm (average 14.75 µm). The conidia are hyaline, oblong-cylindrical, rounded at the ends, 4.78–11.33 µm long with an average of 8.39 µm and 1.53–3.76 µm wide with an average of 2.38 µm and 1 septum in the midth (young conidia aseptate) (s. Fig. 5). At the septum sometimes constricted, at few conidia one cell is a little bit longer and some are slightly flexuose.

On living leaves and stalks of *Glycine max* (L.) Merr.

Type: Austria, Bad Wimsbach (Upper Austria). On living leaves of *Glycine max* (L.) Merr., 12 September 2013, leg. K. Mechtler, det. G. Bedlan (holotype, hb W).

The type specimen has been deposited at the Department of Botany, Natural History Museum, Vienna (hb W).

Fig. 1. Symptoms on upper side of leaf.

Fig. 2. Symptoms on stalk.

Fig. 3. Pycnidia on a leaf spot.

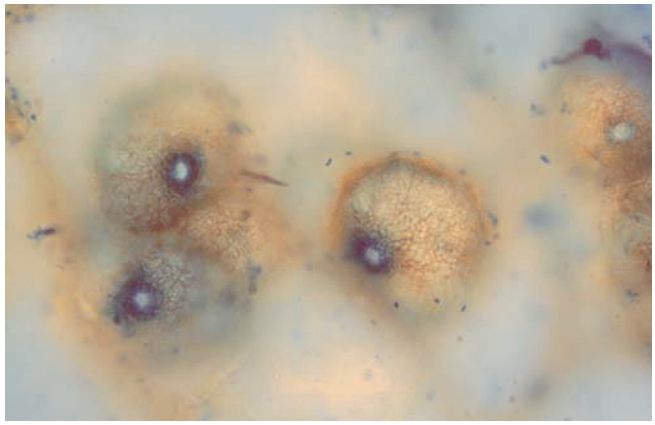

Fig. 4. Pycnidia (stained with Wittmann's Blue).

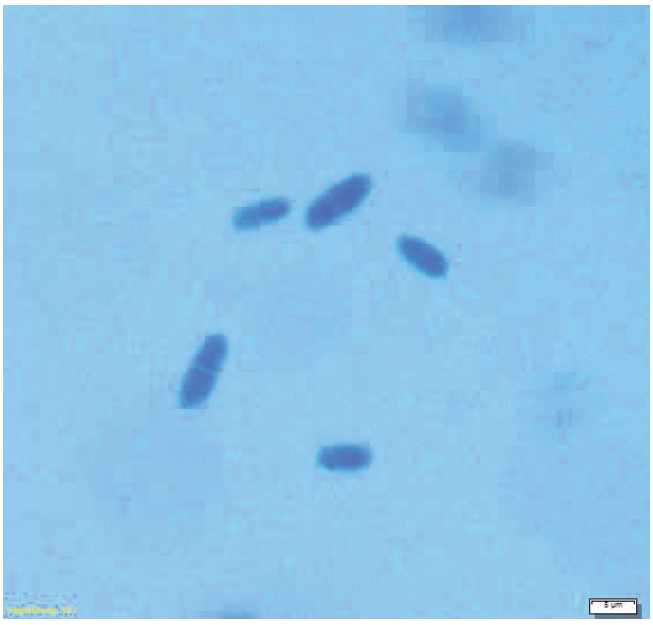

Fig. 5. Conidia (stained with Wittmann's Blue).

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