

First report of *Ramularia cercosporelloides* on *Carthamus tinctorius* in Austria

Julia VOTZI, Gerhard BEDLAN & Uwe BRAUN

Abstract: Votzi, J., Bedlan, G. & Braun, U. 2020: First report of *Ramularia cercosporelloides* on *Carthamus tinctorius* in Austria. *Schlechtendalia* 37: 1–4.

In July 2018, the plant pathogenic fungal species *Ramularia cercosporelloides* was found on leaves of safflower (*Carthamus tinctorius*) in Austria. This is the first report of this species on safflower for Austria and the fourth report worldwide.

Zusammenfassung: Votzi, J., Bedlan, G. & Braun, U. 2020: Erstnachweis von *Ramularia cercosporelloides* an *Carthamus tinctorius* in Österreich. *Schlechtendalia* 37: 1–4.

Im Juli 2018 wurde die pflanzenpathogene Pilzart *Ramularia cercosporelloides* auf Färberdistel (*Carthamus tinctorius*) in Österreich gefunden. Das ist der Erstnachweis dieser Art auf *Carthamus tinctorius* für Österreich und erst die vierte Angabe weltweit.

Key words: *Ramularia*, safflower, new record

Published online 3 Feb. 2020

Introduction

In 2018, a monitoring of fungal infectious agents on safflower has been performed in the main cultivation areas of Austria, viz., Lower Austria, Burgenland and Vienna. In the course of these examinations, characteristic, circular, brown leaf spots have been observed in a safflower crop stand in Vienna. The necrotic leaf spots were spread over the entire lamina, at least in part vein-limited, surrounded by a yellow halo, and sometimes confluent, leading to necroses of larger leaf portions (figs 1–2). A corresponding plant disease on safflower with similar symptoms has not yet been described in the Austrian literature.

Material and Methods

Standard methods (light microscopy) have been used for identification purposes of the safflower disease found in Austria. The colourless conidiophores and conidia have been stained by Wittmann's blue (Wittmann 1970), and the programme 'cellSens' (Ver.1.18) of Olympus has been used for measurements. Voucher specimens are deposited at HAL (Herbarium, Martin Luther University Halle, Germany) and W (Cryptogamic Herbarium, Natural History Museum, Vienna, Austria): Austria, Vienna, Gerasdorfer Street, N 48° 17' 09", O 16° 26' 30", on living leaves of *Carthamus tinctorius*, 18 Jul. 2018, leg. Julia Votzi and Gerhard Bedlan, det. Uwe Braun (HAL 3323 F, W).

Results and Discussion

The necrotic leaf spots were covered by dense light grey caespituli of a hyphomycete (fig. 3), characterized by fasciculate colourless, septate conidiophores, emerging through stomata (fig. 4), giving rise to colourless conidia, either formed singly or in short chains. The oval to cylindrical conidia were 1–4-celled, $15.67\text{--}30.99 \times 6.80\text{--}12.88 \mu\text{m}$, on average $31.59 \times 9.75 \mu\text{m}$, $n = 100$ (fig. 5). Based on the microscopical characteristics of the fungal structures, the specimens collected on safflower in Vienna could be identified as *Ramularia cercosporelloides* U. Braun & Crous (Braun 1998: 419).

R. cercosporelloides was so far only known from Russia, the Netherlands, and Mexico (Braun 1998, Huerta-Espino et al. 2006, Quintana-Obregón et al. 2013, Videira et al. 2016). The present collection from Austria represents the first record of this species for this country, and the fourth detection of this plant disease worldwide. The phylogeny and taxonomy of *R. cercosporelloides* are, however, not yet sufficiently proven. Huerta-Espino et al. (2006) published the first record of *R. cercosporelloides* on *Carthamus* in Mexico, and Quintana-Obregón et al. (2013) stated that this species is genetically not distinct from *Cercospora acroptili* (Bremer) U. Braun. However, these conclusions were just based on ITS data, which are often not sufficient for the differentiation on species level in taxa of the Mycosphaerellaceae. Further examinations, when possible using multilocus approaches, are necessary

to clarify the generic affinity of *R. cercosporelloides* to *Ramularia* or perhaps *Cercospora*, and to find out whether a single or two species are involved on *Carthamus* and *Acroptilon*.

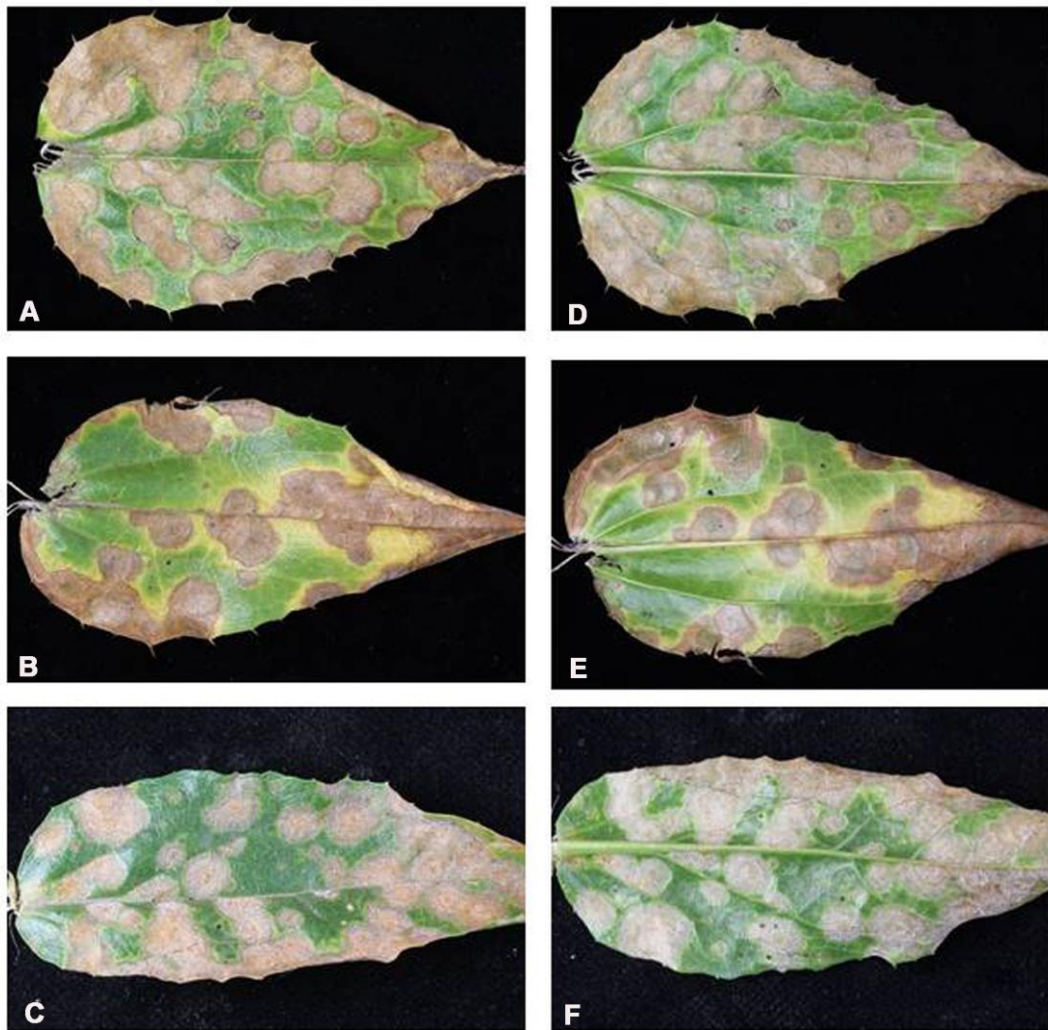


Fig. 1: *Ramularia cercosporelloides*. Symptoms on leaves (left-hand side, A–C: upper leaf surface; right-hand side, D–F: lower leaf surface).

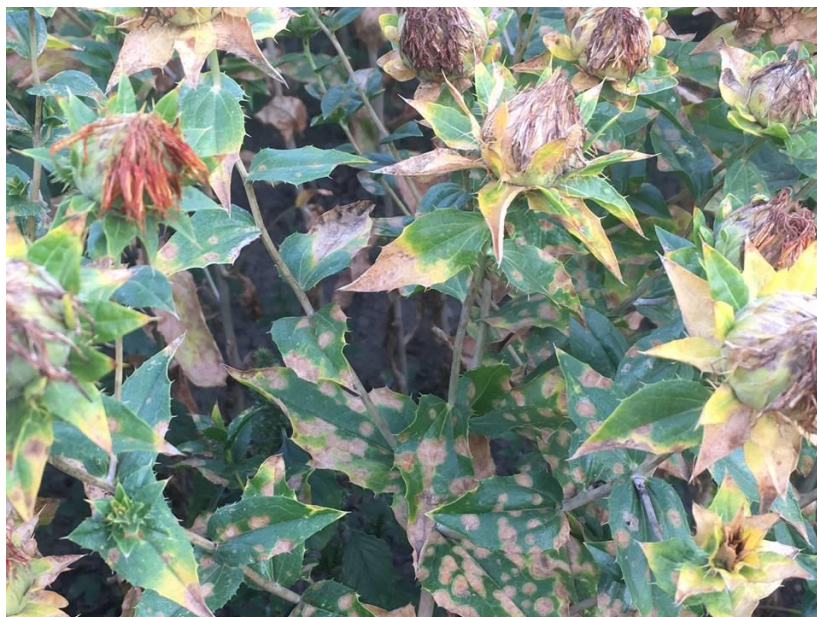


Fig. 2: *Ramularia cercosporelloides*. Infected safflower plants.

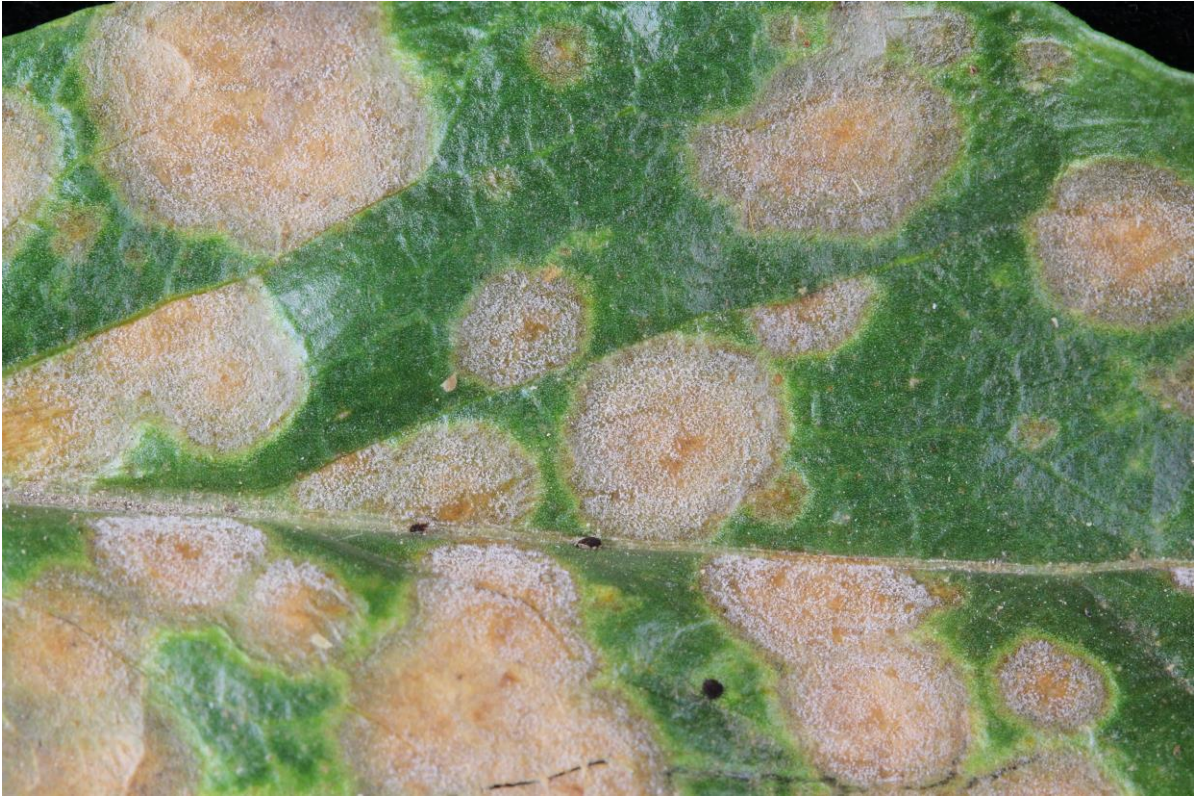


Fig. 3: *Ramularia cercosporelloides*. Leaf spots with caespituli (close-up).

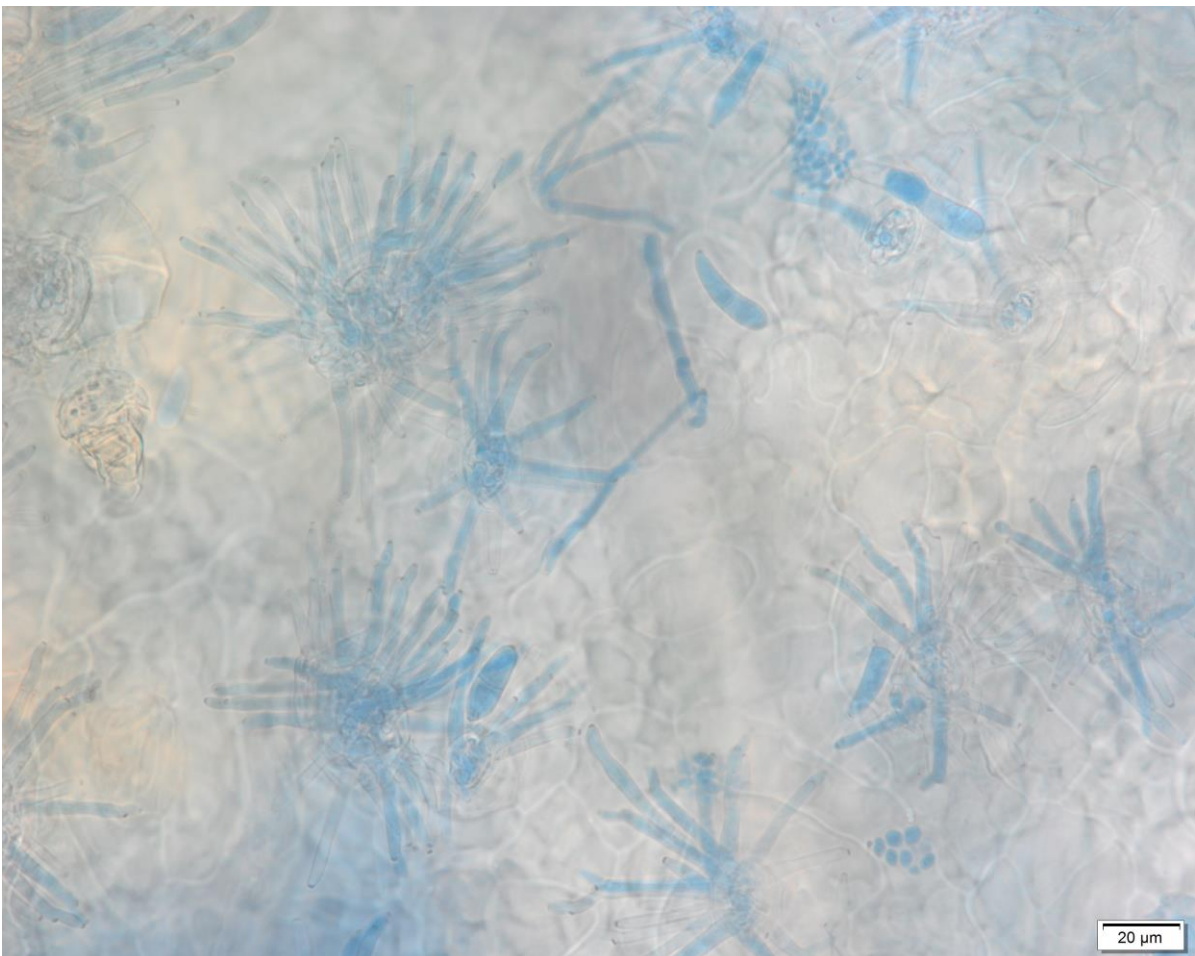


Fig. 4: *Ramularia cercosporelloides*. Fasciculate conidiophores and conidia, stained with Wittmann's blue.



Fig. 5: *Ramularia cercosporelloides*. Conidia stained with Wittmann's blue.

Literature

- Braun, U. 1998: A monograph of *Cercospora*, *Ramularia* and allied genera (Phytopathogenic Hyphomycetes). Vol. 2. IHW-Verlag, Eching.
- Huerta-Espino, J., Constantinescu, O., Velásquez, C., Herrera-Foessel, S. A. & Figueroa-Lopez, P. 2006: First Report of *Ramularia cercosporelloides* on *Carthamus tinctorius* in Northwestern Mexico. *Plant Disease* **90**(12):1552.
- Quintana-Obregón, E., Plascencia-Jatomea, M., Burgos-Hernández, A., Figueroa-Lopez, P. & Cortez-Rocha, M. O. 2013: Isolation and identification of fungi from leaves infected with false mildew on safflower crops in the Yaqui Valley, Mexico. *Revista Mexicana de Micología* **37**: 19–27.
- Videira, S. I. R., Groenewald, J. Z., Braun, U., Shin, H. D. & Crous, P. W. 2016: All that glitters is not *Ramularia*. *Studies in Mycology*. **83**: 49–163.
- Wittmann, W. 1970: Ein neues Rezept zur Herstellung mykologischer Präparate. *Pflanzenschutzberichte* **41**(5/6/7): 91–94.

Addresses of the authors

Julia Votzi, Österreichische Agentur für Gesundheit und Ernährungssicherheit GmbH, Institut für Nachhaltige Pflanzenproduktion, Spargelfeldstraße 191, 1220 Wien, Austria.
(E-Mail: julia.votzi@ages.at)

Gerhard Bedlan, Brammergasse 24, 1130 Wien, Austria.
(E-Mail: gerhard@bedlan.at)

Uwe Braun, Martin-Luther-Universität, Institut für Biologie, Bereich Geobotanik und Botanischer Garten, Neuwerk 21, 06099 Halle (Saale), Germany.
(E-mail: uwe.braun@botanik.uni-halle.de)