APS Publications

Previous

Disease Notes

First Report of *Cercospora apii*, Causal Agent of Cercospora Early Blight of Celery, in Serbia

A. Milosavljević, E. Pfaf-Dolovac, M. Mitrović, J. Jović, I. Toševski, N. Duduk, and N. Trkulja

Affiliations

Authors and Affiliations

A. Milosavljević
E. Pfaf-Dolovac , Institute for Plant Protection and Environment, Department of Plant Disease, Teodora Drajzera 9, 11000 Belgrade, Serbia
M. Mitrović
J. Jović , Institute for Plant Protection and Environment, Department of Plant Pests, Banatska 33, 11080 Zemun, Serbia
I. Toševski , Institute for Plant Protection and Environment, Department of Plant Pests, Banatska 33, 11080 Zemun, Serbia; CABI, 1 Rue des Grillons, 2800 Delémont, Switzerland
N. Duduk , University of Belgrade Faculty of Agriculture, Phytopathology, Nemanjina 6, 11080 Belgrade, Serbia
N. Trkulja , Institute for Plant Protection and Environment, Department of Plant Disease, Teodora Drajzera 9, 11000 Belgrade, Serbia

Published Online: 7 Jul 2014 | https://doi.org/10.1094/PDIS-02-14-0135-PDN

Abstract

Celery (*Apium graveolens* var. *dulce*) is a very important vegetable crop intensively cultivated in eastern and southern Serbia. During a field survey in August and September 2012, we observed symptoms similar to those of Cercospora early blight in eastern Serbia, with some of the affected fields showing up to 80% disease severity. The lesions on leaves were amphigenous, subcircular to angular and more or less confluent. Lesions enlarged and merged with age, followed by the development of necrotic area causing a continuous deterioration of the plant. Conidiophores arising from the stromata formed dense fascicles, sometimes appearing solitary, brown at the base, paler toward the apex, simple, straight to

slightly curved, and rarely geniculate (dimensions 40 to 90 × 5 to 8 µm). Conidia were solitary, hyaline, at first cylindro-obclavate then acicular to acicular-obclavate, straight to slightly curved, subacute to obtuse at the apex, while truncated and thickened at the base (dimensions 45 to 160 × 4 to 5 µm), 5 to 13 septate. Based on the morphological features, we identified the pathogen as *Cercospora apii* Fresen. (2) order to obtain monosporic isolates of the fungus, single conidia were cultivated potato dextrose agar (PDA). To confirm the pathogenicity of the isolates, 5 mm-diameter mycelial plugs from the PDA plates were placed upside down on the adaxial leaf surface of 2-week-old celery seedlings of cv. Yuta. Control plants were inoculated with a sterile PDA plug. Three leaves per plant were disinfected with 70% ethanol, epidermis was scratched with a sterile needle to promote the infection, and inoculated. A total of 12 plants were inoculated with the mycelial plugs and 12 were used as control plants. Inoculated and control plants were kept in a moist chamber for 48 h and then transferred to a greenhouse at 25 ± 2°C. After 2 weeks, the first necrotic spots appeared on inoculated leaves, similar to the symptoms manifested in the field, while control plants remained symptomless. The pathogen was re-isolated and its identity was verified based on morphological and molecular features. To confirm the pathogen's identity, three isolates (CAC4-1, CAC24, and CAC30) were subjected to molecular identification based on the internal transcribed spacer region (ITS) using the ITS1/ITS4 universal primers (5), a partial calmodulin gene (CAL) using CAL-228F/CAL2Rd primers (1,4), and partial histone H3 gene (H3) using CYLH3F/CYLH3R primers (3). Sequences of the amplified regions were deposited in GenBank under accessions KJ210596 to KJ210604. The BLAST analyses of the ITS sequences revealed 100% identity with several *Cercospora* species (e.g., *C. apii* [JX143532], *C. beticola* [JX143556], and *C. zebrina* [KC172066]), while sequences of CAL and H3 showed 100% identity solely with sequences of *C. apii* (JX142794 and JX142548). Based on combined morphological and molecular data, the pathogen infecting celery was identified as *C. apii*, which to our knowledge represents the first report of the presence of the causal agent of Cercospora early blight disease in Serbia.

References: (1) I. Carbone and L.M. Kohn. Mycologia 91:553, 1999. (2) P. W. Crous and U. Braun. CBS Biodivers. Ser. 1:1, 2003. (3) P. W. Crous et al. Stud. Mycol. 50:415, 2004. (4) J. Z. Groenewald. Stud. Mycol. 75:115, 2013. (5) T. J. White et al. PCR Protocols: A Guide to Methods and Applications. Academic Press, Inc., San Diego, CA, 1990.

APS Publications

The American Phytopathological Society (APS)

3340 Pilot Knob Road, St. Paul, MN 55121

USA

+1.651.454.7250

FAX +1.651.454.0766

APS

© 2020 The American Phytopathological Society. Powered by Atypon® Literatum.