First report of leaf spot caused by *Phytophthora capsici* on chili pepper (*Capsicum frutescens* L.) in Pakistan

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Abstract

A survey was conducted in chili and a leaf spot disease with approximately 46% incidence was observed in the field. Morphological characteristics of the isolates correspond to those reported for *Phytophthora capsici*. The resulting sequences of ITS and TEF1 gene had high similarity after BLAST analysis with those of *P. capsici* isolates. The pathogenicity of one isolate was tested by spraying the zoospore suspension and symptoms of leaf spots similar to those observed in the field developed on all the inoculated leaves.

Keywords Chili · *Phytophthora* · ITS

In June 2016, a survey was conducted in chili (*Capsicum frutescens* L.) growing areas of Punjab Province (Pakistan) and a leaf spot disease with approximately 46% incidence was observed in the field. The symptoms on leaves appeared as small brown-red spots that slowly enlarged with the central part light brown and dark brown to black margin. Leaf samples (number of plants = 10, number of leaves per plant = 3–4) were cut into small pieces (3 × 3 mm), excised from the edge of lesions, surface disinfected with 70% ethanol, then placed on plates containing corn meal agar (CMA) at 25 ± 2 °C. White cottony colonies appeared on plates and ovoid, papillate sporangia produced on long pedicels ranging from 30 to 238 µm long. Sporangia were 43.2 to 56.4 µm in length and 24.5 to 42.2 µm in breadth. Chlamydospores 25 to 37 µm in diameter were observed by inoculating isolates into clarified V8 broth for three weeks in darkness at 18 ± 2 °C. Morphological characteristics of the isolates correspond to those reported for *Phytophthora capsici* Leonian (Erwin and Ribeiro 1996). The ITS1/ITS4 primers were used for the amplification of ITS region (White et al. 1990) and translation elongation factor 1α (*TEF1*) was amplified with EF1-728F/EF1-986R primers. The resulting sequences of ITS

(LT707525) and *TEF1* gene (LT707545) had high similarity (99%) after BLAST analysis with those of *P. capsici* isolates (EU515171 and KF318773, respectively). The pathogenicity of one isolate was tested by spraying the zoospore suspension of *P. capsici* (1 × 10⁵ zoospores/ml) on healthy chili plants maintained in a greenhouse at 30 °C. The control plants were sprayed with sterile water. After 6 days, symptoms of leaf spots similar to those observed in the field developed on all the inoculated leaves. No symptoms were observed on control plants. From affected leaves, colonies were reisolated with morphological characteristics identical with *P. capsici*. According to our knowledge, this is the first record of *P. capsici* causing leaf spot on chili in Pakistan.

References

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