First report of *Alternaria alternata* causing postharvest black spot rot of jujube (*Ziziphus jujuba* Mill.) in Lu'an, Anhui Province

Daoyuan Li^{1,2} · Ping Li³ · Dong Liu³ · Xiongyuan Si²

Received: 18 February 2020 / Accepted: 22 January 2021 / Published online: 6 February 2021
© Società Italiana di Patologia Vegetale (S.I.Pa.V.) 2021

Keywords *Alternaria alternata* · Postharvest black spot rot · Jujube

In October 2018, jujube (*Ziziphus jujuba* Mill.) rot disease was observed, and disease incidences ranged from 5 to 12% on 20 markets located in Lu'an, Anhui province, middle part of China. Small, oval, light to dark-brown lesions (2–5 mm) were observed on jujubes surface, and lesions gradually expanded until black spot rot appeared. The small pieces from the margins of disease and healthy jujube tissue were surface-sterilized with 75% ethanol, rinsed in sterile water, and placed onto potato dextrose agar. Three fungal strains were obtained separately after single-spore isolation. Fungal colonies were dark green with white margins and produced loose, aerial hyphae. Conidia were obclavate or cylindrical, measuring 22.3 to 48.6 × 7.5 to 13.1 µm in size, showing 3 to 8 transverse septa and 1 to 4 longitudinal septa. Based on the typical morphological characteristics, the fungus was identified as *Alternaria* spp. (Simmons 2007). Molecular identification was also carried out with primers pairs ITS1/ITS4 and H3-1a/H3-1b (Zheng et al. 2015). The sequences of three isolates were deposited in GenBank (ITS, MN710074–MN710076; histone, MT636904–MT636906), and showed 100% similarity with *A. alternata* (KP124298.1; MN840996.1), respectively. Koch's postulate was carried out on four healthy jujubes by spray-inoculating with 2.2×10^6 conidia/mL suspension on jujube until run-off,

and sterile water was used as control. The jujubes were incubated in a incubator (relative humidity = 90%) for ten days at 25 ± 1 °C. Similar diseased spots appeared after five days, and *A. alternata* was consistently re-isolated from the diseased tissues confirmed by both morphology and molecular characterization. Control remained healthy. *A. alternata* is the most important jujube pathogen causing serious postharvest losses (Bai et al. 2015). To the best of our knowledge, this is the first report of *A. alternata* causing postharvest black spot rot of jujube in Lu'an of Anhui province.

Supplementary information The online version contains supplementary material available at <https://doi.org/10.1007/s42161-021-00765-w>.

Acknowledgements This work was supported by Excellent Young Talents Fund Program of Higher Education Institutions of Anhui Province (Grant No. gxyqZD2018120; gxyqZD2016516; 2019dsgzs19).

References

- Bai JY, Wang XM, Guo QY et al (2015) First report of jujube leaf spot caused by *Alternaria alternata* in China. Plant Dis 99:1643
- Simmons EG (2007) *Alternaria: an identification manual*. CBS Fungal Biodiversity Center, Utrecht
- Zheng HH, Zhao J, Wang TY, Wu XH (2015) Characterization of *Alternaria* species associated with potato foliar diseases in China. Plant Pathol 64:425–433

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

✉ Dong Liu
liudong597855784@aliyun.com

¹ Anhui Engineering Laboratory for Conservation and Sustainable Utilization of Traditional Chinese Medicine Resources, West Anhui University, Yun Lu Bridge West Moon Island, Lu'an 237012, P. R. China

² Anhui Agricultural University, 130 West of Changjiang Road, Hefei 230036, P. R. China

³ Department of Horticulture and Landscape, Anqing Vocational and Technical College, 99 North of Tianzhushan Road, Anqing 246003, P. R. China