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DISEASE NOTE

First report of Verticillium wilt on cultivated radish caused by *Verticillium dahliae* Kleb. in China

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In July 2017, severe root rot symptoms of cultivated radish (*Raphanus sativus* L.) were observed in Langfang, Hebei province, China, with a disease incidence of 5–30%. The affected plants showed symptoms of wilting, yellowing and vascular discoloration in the roots and stems. The pathogen was consistently isolated from infected tissue incubated on potato dextrose agar (PDA) and kept for seven days at 25 ± 2 °C. The colonies were initially white, later becoming dark with the formation of microsclerotia, 26.2–92.4 × 16.5–64.2 μm in size. Conidiophores were long, erect, with verticillate branches. Each conidiophore bore 3–4 hyaline phialides, 14.7–30.4 × 2.0–3.0 μm in size. Single-celled conidia were ellipsoidal to irregularly sub-cylindrical, hyaline, 2.5–9.0 × 1.5–3.0 μm. The fungus was identified as *Verticillium dahliae* Kleb. (Hawksworth and Talboys 1970). The Internal Transcribed Spacer (ITS) region of rDNA and Actin Gene Regions (ACT) were amplified using the primer pairs ITS1/ITS4 and VACTF/VACTR (Inderbitzin et al. 2011), respectively, and sequenced. The sequences of ITS (MH511608) and ACT (MH523631) showed 100% identity with the sequences MG910491 and MG586999, respectively. In the phylogenetic tree based on ITS sequences, the representative isolate (MG910491) clustered in the clade comprising reference strains of *V. dahliae.* To fulfill Koch's postulates, 10 one-month-old healthy plants of cultivated radish were wounded at the root collar and dipped in 10 mL of conidial suspension (1×10^6 CFU/mL). Ten non-inoculated plants served as control. All plants were maintained in the greenhouse with temperature of 15 °C (night)/25 °C (day) as well as a photoperiod of 12 h per day. After 20 days, all inoculated plants showed vascular discoloration and wilt symptoms, while control plants remained asymptomatic. Fungal colonies re-isolated from symptomatic tissues were similar to the original isolates and confirmed being *V. dahliae*. To our knowledge, this is the first report of Verticillium wilt caused by *V. dahliae* on cultivated radish in China and worldwide, providing great values for breeding and integrated management of Verticillium wilt of on this crop.

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