New Disease Reports

First report of pre-harvest rot of pear fruit caused by *Botrytis cinerea* in Turkey

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More than 400,000 tonnes of pears (*Pyrus communis*) are produced in Turkey every year making the country the fifth largest producer worldwide (The World Apple and Pear Association, 2016). During June-July 2015, losses of at least 20% associated with fruit rot of pears cv. Akça were observed in several commercial orchards in the Korkuteli district of Antalya province, one of the most important pear-growing regions of Turkey. In affected fruits, brown rot occurred initially around the blossom end (Fig. 1). Decay expanding from the blossom end resulted in complete rotting of the fruits (Fig. 2). Grey sporulating mycelium developed on the surface of decayed areas. To isolate the fungus, diseased pear fruit were wiped with paper towels wetted with 70% alcohol. Rotten parts of the fruits were cut away. Small sections, 3-5 mm diameter, taken from the margin of the lesions from inner tissues were plated in Petri dishes containing potato dextrose agar (PDA). The plates were incubated at 24°C for a week. For subculturing, hyphae growing out of the tissue pieces were cut and re-transferred to PDA.

Fast-growing fungal colonies produced abundant, white, aerial mycelia that turned grey or greyish-brown with age. The conidia formed in clusters on brown tree-like, branched and septate conidiophores. Conidiophores were one-celled, colourless or pale brown, round or ovoid in shape, and smooth-walled. Sclerotia, which were black and irregular in shape, formed abundantly on PDA. Based on these morphological characteristics, the isolates were identified as *Botrytis cinerea* (teleomorph *Botryotinia fuckeliana*). Morphological identification was tested by comparison of ITS sequences of nuclear ribosomal DNA. After DNA extraction, the ITS region was amplified and sequenced using the primers ITS1 and ITS4. The nucleotide sequence of this isolate (Accession number KU500563) had 100% homology with other *B. cinerea* isolates in GenBank (e.g. KT630651, KT737373, KP780449, KP462722 and KM840848) supporting the morphological determination.

One isolate of *B. cinerea* and ten pear fruits cv. Santa Maria were used for a pathogenicity test. The fruits were washed, dried and wiped with a paper towel wetted with 70% alcohol. The surface next to the blossom end was bored with a 4 mm cork borer and mycelial agar plugs of the same size obtained from three-day-old cultures grown on PDA were placed in the holes of seven fruits. As a control, three fruits were inoculated with sterile agar plugs. The fruits were wrapped with plastic film. After a week, discolouration and decay progressing from the inoculation points were observed, while control fruits remained symptomless (Fig. 3). The pathogen could be re-isolated from symptomatic tissues, thus fulfilling Koch's postulate.

Grey mould is the most important post-harvest disease of pears worldwide (Rosenberger, 1990) and it has been shown that latent infections of the calyx of pear fruits by *B. cinerea* in the orchards were responsible for calyx end decay in storage (Lennox & Spotts, 2004). However, limited information is available on the damage caused by *B. cinerea* on pears before harvest. To our knowledge, this is the first report of *B. cinerea* causing significant amounts of pre-harvest rot in pear orchards in Turkey. It will be important to monitor this disease and its impact in orchards in the coming years.

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Figure 1

Figure 2

Figure 3

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