New Disease Reports

Outbreak of stem canker and dieback of pear trees caused by *Botryosphaeria obtusa* (anamorph *Diplodia seriata*) in Turkey

İ. Kurbetli [1]* and F. Demirci [2]

[1] *Bati Akdeniz Agricultural Research Institute, 07025 Antalya, Turkey*; [2] *Plant Protection Department, Agricultural Faculty of Ankara University, Ankara, Turkey*

*E-mail: kurbetli@gmail.com

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Pear (*Pyrus communis*) has been grown on approximately 23,500 ha in Turkey with an annual production of 462,000 tonnes, Turkey being among the top five countries for pear production in the world (Anonymous, 2013). In May 2012, losses of approximately 15% were observed in Kayseri province associated with a decline of one- or two-year-old pear trees in an orchard containing approximately 5000 pear trees cv. Deveci. Affected trees showing a severe dieback had cankers on trunk base especially at soil level. Infected stem tissues taken from the margins of the canker were cut into small pieces (5 x 3 mm) and plated onto potato dextrose agar (PDA) after surface disinfection in 1.5% NaOCl for three minutes. The plates were incubated at 24°C for a week. Hyphae growing out from the tissue pieces were subcultured onto PDA and malt extract agar.

Fast-growing fungal colonies had abundant, white, aerial mycelia that turned grey to black with age and formed black pycnidia (Fig. 1). Ellipsoid and ovoid conidia initially hyaline and aseptate became light to dark brown and developed 1-2 septa when mature (Figs. 2,3). They measured 17.1-27.5 x 8.2-11.1 µm (mean 22.3 x 9.7 µm). The isolates were identified as *Botryosphaeria* sp. according to these morphological features. After DNA extraction of an isolate, ribosomal DNA fragment amplified with ITS1 and ITS2 primers (White *et al*., 1990) was sequenced and the nucleotide sequence (GenBank Accession No. KC782837) had 99% homology with *Diplodia seriata* isolates in GenBank (JX515708, KC020171, GU121890, EU650671, EF127892, JN607087, JQ659282, HQ288217).

Pathogenicity of the isolate was tested by stem inoculation on pear seedlings cv. Ankara. Stems and branches of four three-year-old pear seedlings were inoculated with a 6 mm plug from a three-day-old culture grown on PDA. Two seedlings inoculated with sterile agar plugs were used as control plants. All inoculations were sealed with wet cotton wool and wrapped with aluminium foil to prevent drying. Plants were kept in a controlled glasshouse at 25 ± 1°C and watered as needed. Infection with canker resulted within two weeks on basal stems and branches averaging 9.8 cm in length and 3.8 cm in width (Fig. 4). No cankers developed in the control plants except for a slight, superficial oxidation that developed on the cut surface (Fig. 4). The pathogen was reisolated from the symptomatic tissues excised from the margin of the canker and plated onto PDA. Nothing grew from the control plants.

Botryosphaeria spp. cause fruit rots, leaf spots, stem and branch cankers, gummosis, dieback and tree death of pome and stone fruit trees (Slippers *et al*., 2007). *Diplodia seriata* was isolated from trunk cankers of apple and pear trees showing dieback symptoms in South Africa (Cloete *et al*., 2011). *B. obtusa* was the most frequently isolated species from cankers occurring on spurs, cordons or trunks of grapevines in California, USA (Urbez-Torres *et al*., 2006). In Turkey, *B. obtusa* was recovered from wood cankers of grapevines showing shoot dieback and wedge-shaped wood discolorations (Akgül *et al*., 2014). To our knowledge, this is the first report of *Botryosphaeria obtusa* (anamorph *Diplodia seriata*) causing disease of pear trees in Turkey, and due to the severe symptoms, it should be considered as a potential threat to pear cultivation of Turkey.

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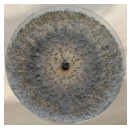

Figure 1

Figure 2

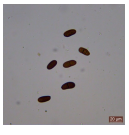

Figure 3

Figure 4

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