



First report of *Aphanomyces cochlioides* causing root rot of sugar beet in Turkey

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Turkey produces c. 16 million tonnes of sugar beet annually, making it the fifth largest producer in the world, and around a third is grown in the province of Konya (FAO, 2014). Fungal root rots of sugar beet (*Beta vulgaris*) have been reported in various areas of Turkey (Erzurum *et al.*, 1995; Özgönen *et al.*, 2009) but the prevalence of root rot in Konya province has not been investigated. Along with root rot pathogens such as *Pythium* spp. and *Rhizoctonia solani*, symptoms resembling those caused by *Aphanomyces cochlioides* including blackening at root tips of seedlings and blackish discolorations on late-stage roots were observed.

Isolations were made from symptomatic seedlings and roots collected from 866 fields, on an *Aphanomyces*-selective medium (Chikuo & Sugimoto, 1985) and half-strength PDA medium. Samples from 50 fields yielded fast growing whitish growth of non-septate mycelium. Mycelial discs of these isolates were grown on amended grated carrot agar (AGCA) as described by Akıllı *et al.* (2012) and incubated in either sterile or non-sterile soil extracts. Zoospore discharge was observed from vesicles formed at the tip of specialised sporangia when culture discs of 5-day-old isolates, grown on AGCA, were incubated for two days (Fig. 1). Typical oospores of *A. cochlioides* were formed on AGCA (Fig. 2) (Windels, 2000). *Macrophomina phaseoli*, *Phoma betae* and *Rhizoctonia solani*, which also cause blackish necroses on roots, were also isolated on occasion, in addition to *A. cochlioides*.

The pathogenicity of sixteen isolates was demonstrated by sowing four replicates of ten seeds of sugar beet cv. Aranka on fungal culture disks in pots of sterile soils. Four non-inoculated pots were kept as controls. Similar symptoms to those observed in the field developed on inoculated seedlings 40 days post emergence (Fig. 3).

Based on the symptoms obtained and morphological features observed, together with its host specificity, the pathogen was identified as *Aphanomyces cochlioides*. To our knowledge this is the first report of the

pathogen in Turkey.

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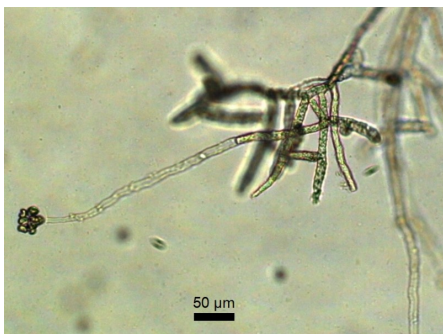


Figure 1

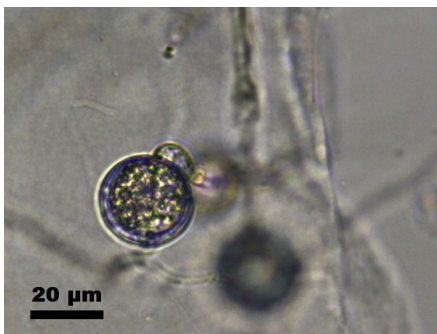


Figure 2



Figure 3

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