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Disease Notes

The Occurrence of Charcoal Disease Caused by *Biscogniauxia mediterranea* on Chestnut-Leaved Oak (*Quercus castaneifolia*) in the Golestan Forests of Iran

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The chestnut-leaved oak (*Quercus castaneifolia*) is native to the Alborz Mountains, including the Golestan Forests, in northern Iran. Trees grow up to 35 (-50) m tall with a trunk up to 2.5 (-3.5) m in diameter. During 2010, we received reports of a decline of oak trees in the Ghorogh Region of the Golestan Forests. The decline began with discolorations and browning of the leaves, resulting in drying of the foliage. Viscous liquid exudates were observed on the trunks, resulting in a brown-black discoloration of phloem and bark. In January 2011, all infected trees were dead and exhibited symptoms of charcoal disease with carbonaceous, perithecial stromata erupting from the bark on stems. Perithecia were obovoid, containing short-stipitate, amyloid asci with dark brown, ellipsoid ascospores, 14 to 19 × 7 to 9 μm, with straight germ slits along the spore length. On the basis of these morphological characteristics, the fungus was identified as *Biscogniauxia mediterranea*. Blast searches of the NCBI GenBank nucleotide database were done using ITS sequences derived from three cultures (CBS 129072 to 129074). GenBank Accession Nos. JF295127 to JF295129 of the isolated fungus differed by one nucleotide from *B. mediterranea* (GenBank Accession No. AF280624) (1,3). Pathogenicity tests were conducted using an isolate of *B. mediterranea* under greenhouse conditions. Six-month-old *Q. castaneifolia* seedlings were inoculated by means of stem wounds with a mycelial plug of colonized potato dextrose agar. After 6 months, typical decline disease symptoms associated with charcoal disease were observed and the same fungus was reisolated. Perithecia were observed on the surface of black carbonaceous stromata, which usually developed on stems of inoculated plants. The decline is known as charcoal disease because fungal growth induces a typical charcoal-black surface on diseased branches and trunks. The pathogen can easily spread through large cavity vessels, colonize bark and woody tissues, and is able to kill the host in a single, growing season. *B. mediterranea* causes necrosis on stems and branches of *Quercus* spp., including *Q. suber*, *Q. cerris*, *Q. frainetto*, *Q. pubescens* (4), *Q. alba*, *Q. ilex*, *Q. imbricaria*, *Q. lusitanica*, *Q. palustris*, and *Q. pyrenaica* (2) in Europe, North America, Africa, New Zealand, and Asia (China and India). On the basis of our current knowledge, *Q. castaneifolia* represents a new host of *B. mediterranea*, and this is the first report of this fungal pathogen from Iran causing charcoal disease on *Q.*

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castaneifolia trees in the Golestan Forest. Given its new introduction into Iran, it is highly likely that it will spread to species of *Fagus*, *Zelkova*, and other woody hosts in the area.

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