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## Application of the consolidated species concept to *Cercospora* spp. from Iran

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Abstract



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The genus *Cercospora* includes many important plant pathogenic fungi associated with leaf spot diseases on a wide range of hosts. The mainland of Iran covers various climatic regions with a great biodiversity of vascular plants, and a correspondingly high diversity of cercosporoid fungi. However, most of the cercosporoid species found to date have been identified on the basis of morphological characteristics and there are no cultures that support these identifications. In this study the Consolidated Species Concept was applied to differentiate *Cercospora* species collected from Iran. A total of 161 *Cercospora* isolates recovered from 74 host species in northern Iran were studied by molecular phylogenetic analysis. Our results revealed a rich diversity of *Cercospora* species in northern Iran. Twenty species were identified based on sequence data of five genomic loci (ITS, TEF1- $\alpha$ , actin, calmodulin and histone H3), host, cultural and morphological data. Six novel species, viz. *C. convolvicola*, *C. conyzae-canadensis*, *C. cylindracea*, *C. iranica*, *C. pseudochenopodii* and *C. sorghicola*, are introduced. The most common taxon was *Cercospora* cf. *flagellaris*, which remains an unresolved species complex with a wide host range. New hosts were recorded for previously known *Cercospora* species, including *C. apii*, *C. armoraciae*, *C. beticola*, *C. cf. richardiicola*, *C. rumicis*, *Cercospora* sp. G and *C. zebrina*.

**Keywords:** BIODIVERSITY; CERCOSPORA APII COMPLEX; CERCOSPOROID; HOST SPECIFICITY; LEAF SPOT; MULTILOCUS SEQUENCE TYPING (MLST); MYCOSPHAERELLA; TAXONOMY

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