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DISEASE NOTES



First Report of Stolbur Phytoplasma on *Mentha × piperita* in Serbia

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Peppermint (*Mentha × piperita* L.) is an herbaceous perennial widely cultivated in Serbia. Known for its medicinal and aromatic properties, its leaves are used for tea and essential oil production. Peppermint is mainly propagated by rhizome cuttings in Serbia. Veinal reddening on the lower leaf surface and stunted growth were first recorded at the beginning of July 2014, in the second year of cultivation at the Bački Petrovac locality (45°21'38" N; 19°35'30" E) (Vojvodina Province, Serbia). These symptoms suggested a phytoplasma-associated infection so plants were regularly monitored for disease progression. Late in August 2014, a severe leaf reddening followed by reduction in growth strengthened our supposition. At the end of August 2014, total nucleic acid was extracted from the vascular tissue of 15 symptomatic and 15 asymptomatic leaves using the cetyltrimethylammonium bromide (CTAB) method. Initial phytoplasma detection was conducted on the 16S rRNA gene using a nested PCR assay with phytoplasma universal primer pairs P1/P7 and R16F2n/R2 (Lee et al. 1998), producing DNA fragments of 1.8 and 1.2 kb, respectively, on all symptomatic leaf samples. Negative results were obtained with all asymptomatic samples (negative control). All positive samples were then retested with a

stolbur-specific Stol11 protocol. The presence of stolbur phytoplasma in these samples was detected with nested PCR using the primers STOL11f2/r1 (Daire et al. 1997) followed by STOL11f3/r2 (Clair et al. 2003). These primers are designed to amplify the stolbur-specific nonribosomal region. The sequence from a symptomatic representative sample was deposited in GenBank (Accession No. KT281865). The BLASTn search showed a 99% homology to a strain from Germany (JQ977746) from *Convolvulus arvensis* and from the strain JQ977745 from *Urtica dioica*, both associated with 'Candidatus Phytoplasma solani' (Stolbur). Sequencing data confirmed the association of Stolbur phytoplasma with affected *M. × piperita* plants. Stolbur phytoplasma was detected also on *M. arvensis* L., a weedy plant from Italy (Credi et al. 2006). To our knowledge, this is the first report of Stolbur phytoplasma disease on *M. × piperita* in Serbia.



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