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DISEASE NOTES



# First Report of 'Candidatus Phytoplasma solani'



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The parsnip (*Pastinaca sativa* L.) is a biennial plant native to Eurasia. During August and September 2016, typical phytoplasma yellows symptoms were observed on parsnip plants grown in a 105-m<sup>2</sup> experimental field in South Bačka, Vojvodina, Serbia. A phytoplasma-like disease, expressed as leaf and petiole redness and chlorosis, was observed on approximately 5% of plants. Some plants had signs of complete foliage necrosis and at the harvest time in October were not suitable for human consumption. Total nucleic acid was extracted from leaf midveins collected from eight symptomatic and four asymptomatic plants. Phytoplasma infection was detected using nested polymerase chain reaction (PCR) assays with specific primer pair P1/P7 followed by R16F2n/R2 for the amplification of phytoplasma 16S rRNA gene. Phytoplasmas were detected in all eight extracts from symptomatic plants as well as in two of four asymptomatic ones. Fragments amplified with R16F2n/R2 primers were analyzed by restriction fragment length polymorphism with *TruI* restriction enzyme. The phytoplasmas produced identical restriction profiles to those of 'Candidatus Phytoplasma solani.' One amplicon obtained with P1/P7 primers (16S-23S rDNA) was subjected to direct sequencing yielding a 1,640-bp nucleotide sequence. The obtained sequence has been deposited in NCBI GenBank under accession no. KY579338 and shared

sequence identity with 11 '*Ca. P. solani*' strains and >99.7% sequence similarity with the '*Ca. P. solani*' reference strain (AF248959). Parsnip infected by '*Ca. P. solani*' has been reported in Spain ([Alfaro-Fernández et al. 2011](#)). In Serbia, '*Ca. P. solani*' has been detected in the family Apiaceae on carrot and celery while '*Ca. P. asteris*' has also been detected on carrot ([Duduk et al. 2008](#); [Ivanović et al. 2011](#)). To our knowledge, this is the first report of phytoplasma infecting parsnip in Serbia. The presence of Stolbur on parsnip in Serbia as another natural host can be of importance for the management of the disease in other crops in Eastern Europe.

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