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# plant disease

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## DISEASE NOTES

## First Report of 'Candidatus Phytoplasma trifolii'-Related Strain Associated With a New Disease in Tomato Plants in Zacatecas, Mexico

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[Citation](#)[Open Access.](#)**ABSTRACT**

Tomato (*Solanum lycopersicum* L.) is an economically important vegetable crop in the state of Zacatecas, Mexico. During a survey in November 2014 in the municipality of Jalpa, symptoms of severe dwarfing, yellowing, and decreased flowering were observed in approximately 15% of the tomato plants ('Galilea' variety) from commercial fields. Total DNA was extracted from ten symptomatic and five symptomless tomato plants. Direct and nested PCR assays targeting the 16S rRNA gene were used to confirm the association of phytoplasma with the disease. The oligonucleotides used for direct PCR were P1 5'-AAGAGTTTGATCCTGGCTCAGGATT-3' and Tint 5'-TCAGGCGTGTGCTCTAACCAGC-3' (Smart et al. 1996), and for nested PCR, R16F2n 5'-GAAACGACTGCTAAGACTGG-3' and R16R2 5'-TGACGGGCGGTGTGTACAAACCCCG-3' (Gundersen and Lee, 1996). No PCR products were obtained from the symptomless plants. The nested PCR amplicons (1.2 kb) amplified from all symptomatic plants were cloned separately and directly sequenced. BLAST analysis of the 16S rDNA sequences revealed that they shared 100% sequence identity to each other and 99.0% sequence identity with those of the 16SrVI group, 'Candidatus Phytoplasma trifolii' strains. Computer-simulated RFLP analysis of the aligned 16S rDNA sequence of the Jalpa tomato phytoplasma sequence (GenBank Accession No. KX092011) was performed with 17 distinct restriction enzymes using iPhyClassifier (<http://plantpathology.ba.ars.usda.gov/cgi-bin/resource/iphyclassifier.cgi>) and RFLP profiles were compared with each 16S phytoplasma group and subgroup (Zhao et al. 2013). The Jalpa tomato phytoplasma 16S rDNA sequence (KX092011) shared 99.1% identity with that of the reference strain under (AY390261). Moreover, RFLP patterns were identical to those of the group 16SrVI, subgroup A. To our knowledge, this is the first report of a 'Ca. Phytoplasma trifolii' strain associated with symptomatic tomatoes plants in Jalpa, Zacatecas, Mexico. 'Ca. Phytoplasma trifolii' has been previously reported producing big bud symptoms in tomato in China (Du et al. 2013) and chili pepper plants in Zacatecas, Mexico (Mauricio-Castillo et al. 2015). The presence of 16SrVI phytoplasmas in chili pepper and tomato may impose epidemiological constrains to the cultivation of these two economically important crops in Mexico.

**References:**Section: [Choose](#)

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