



**First Report of a New Natural Host for 'Candidatus
Phytoplasma solani': Plum (*Prunus domestica* L.) in Jordan**

Journal:	<i>Plant Disease</i>
Manuscript ID	Draft
Manuscript Type:	Plant Disease Note
Date Submitted by the Author:	n/a
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Keywords:	Ca.Phytoplasma solani, Plum, Jordan

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12 Plum (*Prunus domestica* L., Rosaceae) is among the most important stone fruit species grown in Jordan,
13 especially in the Northern part of the country. In September of 2017, trees of *P. domestica* L. cv. Golden Plum
14 showing typical phytoplasma symptoms of yellowing and reddening leaves, stunted growth and witches'-
15 broomed branches were observed in an open stone fruit orchard in presence of bindweed (*Convolvulus*
16 *arvensis* L.) showing stunting and leaf chromatic alteration in the Mafraq region North East of Jordan. Leaf
17 samples were collected from 15 symptomatic and 5 asymptomatic plum trees and 3 symptomatic bindweed
18 plants. Total genomic DNA was extracted with the Qiagen DNeasy mini kit (Qiagen, Germantown, MD, USA)
19 following the manufacturer's instructions. All samples were analyzed by PCR using the phytoplasma universal
20 primer pairs P1/P7 (Lorenz et al. 1995), followed by nested PCR with primer pair R16F2n and R16R2 (Lee et al.
21 1998). The same samples were also tested by specific real-time PCR (Hren et al. 2007). DNA samples of five out
22 of twenty *P. domestica* and all three bindweed samples tested positive for the presence of a phytoplasma by
23 real-time PCR and by PCR yielding the expected PCR amplicons around 1,25 kbp. No phytoplasma was
24 detected in the asymptomatic plum trees that were sampled from the same orchard. Bidirectional sequencing
25 (Macrogen, Amsterdam, The Netherlands) was done for each PCR amplicon directly after gel purification
26 (Smartpure, Eurogentec, Seraing, Belgium). A BLASTn similarity analysis of the assembled sequences derived
27 from the plum and the bindweed host plants revealed that the sequences of phytoplasma infecting *P.*
28 *domestica* (GenBank® Accession no. MH085227, MH085228, MH085229) and *C. arvensis* (Accession no.
29 MH085225, MH085226) in Jordan were highly similar (99%) to the deposited sequence of '*Candidatus*
30 *Phytoplasma solani*' from of *Vitis vinifera* L. in Jordan (KC835139) and the '*Ca. P. solani*' sequence of *Capsicum*
31 *annuum* L. isolate from Serbia (AF248959). Virtual RFLP analysis (*iPhyClassifier*, Zhao et al. 2009) and
32 phylogenetic analysis (BioNumerics, Applied Math, Belgium) confirmed the affiliation of these phytoplasma
33 isolates identified in plum and bindweed in Jordan to the species '*Ca. Phytoplasma solani*', subgroup 16SrXII-A.
34 Taken together, these results confirmed the first occurrence of '*Candidatus Phytoplasma solani*' associated
35 with plum, more specifically in the stone fruit growing area of Mafraq. The presence of the bindweed as a well-
36 known phytoplasma natural reservoir (Salem et al. 2013) and potential insect vectors may have contributed to
37 the plum infection in Jordan. So far, to the best of our knowledge, this is the first report of '*Candidatus*
38 *Phytoplasma solani*' infecting *P. domestica* as a new natural host plant.

39 **References:**

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