Phytoplasmas are well-known obligate parasites of the plant phloem and associated with diseases in many important crops and trees worldwide. Elm yellows phytoplasma (EY) belongs to the ribosomal group 16SrV subgroup A and is assigned as ‘Candidatus Phytoplasma ulmi’. It is known to be associated with elm phloem necrosis, leaf yellowing, stunting, witches broom and decline in various elm species. In 2013, European white elms (Ulmus laevis PALL.) were investigated for EY infection in Berlin (M42), in the palace Caputh (M4) and in the riparian forest Spreewald (M12) (Brandenburg; Fig. 1 & 2).

RESULTS & CONCLUSIONS

- 30/58 U. laevis trees (Fig. 3) were tested positive for phytoplasma infection in Germany
- sequence analysis allowed assignment to 16SrV-A
- this study strengthens the results of Serbian EY isolates obtained from U. laevis (Jović et al. 2011, Tab. 1)
- first report of ‘Ca. P. ulmi’ infecting U. laevis in Germany
- DNA extraction by CTAB approach (Ahrens & Seemüller 1992, modified)
- diagnostic direct & nested PCR for amplification of partial 16S rRNA by applying primer pairs P1/P7 (Smart et al. 1996) and R16F2n/R16R2 (Gunderson & Lee 1996)
- sequence determination and alignment to reference sequence EY1’ (Lee et al. 2004)

Fig. 1: Ulmus laevis in Germany.
A: elms in the riparian forest Spreewald; B: leaf exhibiting mild yellowing symptoms (indicated by arrow); C: asymptomatic leaves.

Fig. 2: Location of U. laevis trees analyzed in Germany.

Fig. 3: Nested PCR of phytoplasma detection by partial 16S rRNA amplification. (-): water control; (+): ‘Ca. P. asteris’ strain AY1 from Vinca; M: 1kb Marker.

Tab. 1: Variations of the partial 16S rRNA sequences.

<table>
<thead>
<tr>
<th>EY isolate</th>
<th>Acc.no.</th>
<th>host</th>
<th>bp position</th>
<th>bp position</th>
<th>bp position</th>
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<tr>
<td>EY1’</td>
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</tr>
</tbody>
</table>

Unique sequence to ‘Ca. P. ulmi’ in 16S rRNA:

5’-CGT TAG TTG CC-3’

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