A phytoplasma associated with witches' broom disease of Tabebuia pentaphylla in Brazil

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Tabebuia pentaphylla (syn. T. pallida) is a plant native to El Salvador that produces spectacular white to pink flower panicles and has become a popular ornamental in Brazil. Severe witches' broom symptoms, plant deformation, weakening, stunting and death was first observed in Brazil at the site of the plant's introduction (Rio de Janeiro, Parque do Flamengo). The symptoms suggested that a fungus similar to Montielophthora (formerly Cronartium) pentaphylla might be involved but none could be isolated. The disease had previously been reported in Puerto Rico (Cook, 1938) and Venezuela (Ciferri, 1949) where viruses were implicated as the cause. Samples of healthy and diseased shoots of T. pentaphylla were collected from two sites in Rio de Janeiro. Fresh, unfixed petioles and midribs from diseased and healthy leaves were hand-sectioned (0.1–0.5 mm thick), mounted in water and examined by epifluorescence microscope equipped with an exciter filter BG 12, a dichromic mirror 510, and a barrier filter G 247 (Namba et al., 1981). TEM observations were made using the procedure of Matsuoka & Carvalho (1987). Fluorescence microscopy showed a yellow-green fluorescence associated with diseased phloem cells but not healthy tissue. TEM observations showed typical phytoplasmas (appearing as spherical to ovoid structures of variable sizes) consistently present in phloem sieve tubes from diseased plants, but not symptomless plants. DNA was extracted from samples and used as a template for nested PCR analysis using primers P1/P7 and R16F2n/R16R2 (Arocha et al., 2005), and bands of the expected size (1.25 kb) were produced in 3/5 diseased samples. These amplicons were cloned and sequenced (GenBank Acc. No: EF647744), the sequences aligned and subjected to BLAST analysis. The highest similarity (98% identity) was with a 16SrII group isolate from lime (Citrus aurantifolia), 'Candidatus Phytoplasma aurantifolia' (Acc. No. U15442). These observations were the first to implicate phytoplasma as the likely aetiological agent of T. pentaphylla witches' broom disease worldwide.

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References

Identification of 'Candidatus Liberibacter asiaticus' from foshou (Citrus medica) in China


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In China, foshou or Buddha’s hand (Citrus medica var. sarcodactylus), is commonly cultured and valued for its fragrance and used medicinally as a stomach stimulant, expectorant and tonic. We have observed huanglongbing (HLB) symptoms on foshou since 1999. Yet, the aetiological agent of citrus huanglongbing by PCR amplification of ribosomal protein genes of the beta operon.

References

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