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Sensitive detection and identification of mycoplasma-like organisms in plants by polymerase chain reactions

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DNA amplification by polymerase chain reactions (PCR) was employed to detect host plant infection by several mycoplasmalike organisms (MLOs), including the aster yellows (AY), dwarf aster yellows (DAY), and periwinkle little leaf (0â€“1) MLOs. For PCR, two pairs of oligonucleotide primers, designated AY18pm and AY19pm, respectively, were synthesized on the basis of partial sequences of cloned AY MLO DNA fragments AY18 and AY19. Reaction mixtures containing primer pair AY18pm yielded a DNA product of 1.6Kbp, when template consisted of DNA extracted from AY MLO- or DAY MLO-infected Catharanthusroseus (periwinkle). A DNA product of 1.0Kbp was obtained with primer pair AY19pm, when template consisted of DNA extracted from C.roseus infected by AY MLO, DAY MLO, or periwinkle little leaf (strain 0â€“1) MLO. MLO-specific bands were observed when reaction mixtures contained as little as 5 pg total nucleic acid from infected plants. No PCR product was observed when reaction mixtures contained only DNA from healthy plants or DNA from plants infected by western X MLO or by tomato

big bud MLO. The findings indicated that the PCR system is useful for sensitive detection and differentiation of MLOs in infected hosts.

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