Abstract

Phytoplasmas are phloem-limited bacterial plant pathogens that have been found associated with hundreds of plant species including many vegetable crops, fruit trees, and ornamental plants. During 2018 -2020, plants showing suspected phytoplasma symptoms were collected from all regions of southern Khorasan province. Abnormal symptoms including yellowing, stem fasciation, and witches' brooms were observed on some crops and trees. Detection, identification, and phylogeny of phytoplasma agents were performed based on conserved regions of 16SrRNA gene with primers P1/P7, R16R2/ R16F2n and M1/ M2 in the direct and nested polymerase chain reaction. The results of the study revealed that Phytoplasma diseases have been prevalent in different regions and on some crops. Based on our knowledge, the association of phytoplasma agents with the yellowing and stem fasciation of Safflower, stem fasciation of rapeseed, Barberry, leaf yellowing Narcissus, yellowing and witches' brooms of alfalfa were confirmed. Phytoplasmas associated with this symptom belonging to 16SrII group. These are the first reports of association of 16SrII strains with yellowing and stem fasciation of Safflower, stem fasciation of rapeseed, and leaf yellowing narcissus in the world. Yellowing and witches' brooms of alfalfa has been previously reported from the Tabas region in the Southern Khorasan province of Iran and in this study, the geographical distribution of this disease showed that in addition to Tabas region, this disease is also prevalent in the southern and western regions of the province. Since diseases associated with 16SrII group phytoplasmas are one of the most destructive diseases in different crops, natural occurrence contamination of these agents can pose a serious threat to its emergence and spread in horticultural crops as well as its possible new hosts in the region. According to the results of this study, the importance of identifying and managing sucking insects as potential vectors is important in the management of these diseases.

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