

An increase of the host range of '*Candidatus* *Phytoplasma* sp. in Cuba

Incremento en la gama de hospedantes de '*Candidatus* *Phytoplasma* sp. en Cuba



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Phytoplasmas cause devastating losses in crops and natural ecosystems worldwide. They are phloem-limited bacteria that can be transmitted by phloem-feeding insects of the Hemiptera order. Weeds play a significant role in the epidemiology of diseases because of their capacity to house the causal agents and function as a refuge for their vectors, and they have currently become an important element for the population dynamics of phytoplasmas. *Parthenium hysterophorus* L. and *Bidens alba* (L.) DC. are reported as host plants of phytoplasmas worldwide. In Cuba, phytoplasmas have emerged as one of the main factors limiting the production of several important crops like sugarcane, tomato, pepper, papaya, and common bean, among others. Their occurrence has also been reported in the weeds *Cynodon dactylon* L., *Conyza canadensis* (L.) Cronquist., *Sorghum halepense* (L.) Pers., *Macroptilium lathyroides* (L.) Urb., and *Cyperus rotundus* L. growing in production areas of sugarcane, papaya and common bean. However, their presence in weeds associated with the tomato and pepper crops has not been reported.

In surveys conducted in suburban tomato and pepper producing areas in the locality of Guanabacoa, La Habana province, in 2017 and 2018, 30 samples were collected from symptomless plants of the weeds *Parthenium hysterophorus* L., *Senna alata* (L.) Roxb., *Ocimum sanctum* L., *Bidens alba* (L.) DC., *Portulaca oleracea* L., *Euphorbia heterophylla* L., *Amaranthus albus* L., *Digitaria sanguinalis* L. (Scop.). Twenty samples were also taken from symptomatic tomato and pepper plants. The DNA was extracted and analyzed by a nested PCR using universal primers, and it made possible detect phytoplasmas in the tomato and pepper plants and in 16 weed samples corresponding to: *Parthenium hysterophorus* L., *Senna alata* (L.) Roxb., *Bidens alba* (L.) DC., *Portulaca oleracea* L., *Amaranthus albus* L.

As far as we know, these results are the first reports for Cuba of these weeds as phytoplasma hosts. These results are an evidence of an increase of the host range of this pathogen in crop areas in Cuba and allow suggesting that the presence of the disease in tomato and pepper plants could have been caused by pathogen transmission from the weeds. However, given the occurrence of phytoplasmas in economical crops in Cuba and the increase of host weeds in tomato and pepper producing areas, our results suggest the need for a complete identification of groups and subgroups associated with the phytoplasmas present in the weeds and in the positive tomato and pepper plants. It is also necessary to carry out an epidemiological study of the infections caused by phytoplasmas in these crops in Cuba.

The authors of this work declare no conflict of interest.

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