

Detection of '*Candidatus Phytoplasma* sp.' in *Empoasca* spp. present in the bean crop in Cuba

Detección de '*Candidatus Phytoplasma* sp.' en *Empoasca* spp. presente en el cultivo del frijol en Cuba

Madelaine L. Quiñones-Pantoja¹✉, Loidy Zamora-Gutiérrez¹, Claudia Hernández-Milián¹, Adayakni Sánchez-Castro¹, Karel Acosta-Pérez², Robert Leyva-Martínez³, Miriam Fernández-Argudín¹

¹ Dirección de Sanidad Vegetal, Centro Nacional de Sanidad Agropecuaria (CENSA), Apdo 10, San José de Las Lajas, CP 32700, Mayabeque, Cuba.

² Universidad de Las Tunas «Vladimir I. Lenin», Ave. Carlos J. Finlay s/n. Israel Santos, CP 75 200, Las Tunas, Cuba.

³ Unidad de Extensión, Investigación y Capacitación Agropecuaria de Holguín (UEICAH), Holguín, Cuba.

Phytoplasmas cause a large number of emerging diseases in crops of economic importance. These pathogens are prokaryotic organisms of the Mollicutes class, limited to the phloem of the plants and are mainly transmitted by insects of the order Hemiptera (families Cicadellidae, Fulgoridae and Psyllidae). In Cuba, they have emerged as one of the main factors limiting the production of solanaceous and fabaceous crops, among others. Identification of 'Ca Phytoplasmas asteris' associated with bean symptomatic plants and the presence of *Empoasca* spp. were reported in bean production areas of the province of Mayabeque in 2012. In 2016, the morphological identification of *Empoasca* spp. (Typhlocybinae) present in these areas revealed the presence of *Empoasca kraemerii* Ross and Moore, *Empoasca fabae* Harris, and *Empoasca papaya* Oman in plants with symptoms similar to those produced by phytoplasmas. However, their relationships with transmission of phytoplasmas in our country were not determined.

In surveys conducted in bean producing areas in the municipalities of Güines and San José de las Lajas, Mayabeque province, during 2015 and 2016, 20 samples of leafhoppers were collected in each locality. In addition, 10 samples collected in the central region were processed. The DNA was extracted and analyzed by a nested PCR using universal primers, which made possible to detect phytoplasmas in these insects.

It is important to point out that even when phytoplasmas were detected in the insects collected, it was not possible to affirm they were the vectors associated with the infection, since for this, it is necessary a study under controlled conditions establishing the relationships between transmission and the phytoplasmas. However, taking into account the impact caused by leafhoppers as pests and on the transmission of phytoplasmas, the results suggested the need for an in-depth study of the phytoplasma-bean- *Empoasca* spp. complex.

✉ Autor para correspondencia: Madelaine L. Quiñones-Pantoja. E-mail: madeqp@censa.edu.cu

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