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DISEASE NOTES

First Report of *Brevipalpus papayensis* as
Vector of *Coffee ringspot virus* and *Citrus
leprosis virus C*

M. A. Nunes,[†] CCSM-IAC, CP 4, 13490-970; **J. L. de Carvalho Mineiro**, Instituto Biológico de Campinas; **L. A. Rogerio** and **L. M. Ferreira**, CCSM-IAC, CP 4, 13490-970; **A. Tassi**, Escola Superior de Agricultura "Luiz de Queiroz"/USP, Piracicaba, SP, Brazil; **V. M. Novelli**, CCSM-IAC, CP 4, 13490-970, Cordeirópolis, SP; **E. W. Kitajima**, Escola Superior de Agricultura "Luiz de Queiroz"/USP, Piracicaba, SP, Brazil; **J. Freitas-Astúa**, Embrapa Cassava and Fruits, Brazil, and Instituto Biológico, SP, Brazil.

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Coffee ringspot virus (CoRSV) and *Citrus leprosis virus C* (CiLV-C) are two emergent pathogens that can cause significant losses to coffee and citrus, respectively. Recently, it was verified that *Brevipalpus phoenicis*, originally reported as vector of these viruses, is indeed a complex group reclassified into eight mite species ([Beard et al. 2015](#)). Among those, *B. papayensis* Baker (Acari: Tenuipalpidae) occurs in citrus, but seems to be prevalent in coffee plantations. However, it is still unclear the relationship (if any) of *B. papayensis* with CiLV-C or CoRSV. In order to determine whether or not this mite is capable of transmitting these viruses, one single female specimen was collected from *Coffea arabica* cv. Catuai in Atibaia, SP-Brazil, and multiplied in laboratory as an isolate. Specimens were mounted in Hoyer's medium and morphologically confirmed by phase contrast microscopy as *B. papayensis*, according to the classification of [Beard et al. \(2015\)](#). This isolate population was reared onto healthy coffee leaves, in $25 \pm 1^\circ\text{C}$, 14 h light/10 h dark and $60 \pm 10\%$ humidity. RT-PCR assays using primers for the detection of each of the viruses were performed in order to confirm the virus-free colony status. *B. papayensis* mites were transferred to either coffee leaves exhibiting ringspots or sweet orange fruits symptomatic for leprosis, which served as sources of inocula for 7 days. Viral acquisition was confirmed by RT-PCR of viruliferous mites using specific primers for the

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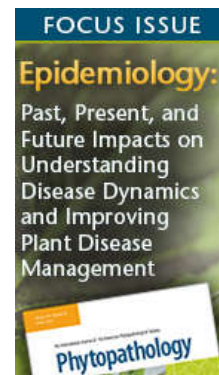
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detection of CoRSV (Kitajima et al. 2011) or CiLV-C (Locali et al. 2003), according to Kubo et al. (2011). After the acquisition period, 60 mites from each source of inoculum were transferred to 20 *Arabidopsis thaliana* plants (6 mites per plant), a plant species that can host both. Fifteen days after infestation, typical pinpoint lesions were observed and virus presence was confirmed by RT-PCR in 60% of the CiLV-C- and 30% of the CoRSV-inoculated plants. Additionally, common bean plants (*Phaseolus vulgaris* cv. Una) were infested with 15 *B. papayensis* mites from the isoline population reared onto CiLV-C inoculum (one mite per leaf, isolated by entomological glue). Perhaps due to the low efficiency in single mite transmission, only 27% of the leaves became symptomatic. The presence of CiLV-C was confirmed by RT-PCR and sequencing (98% of similarity to GenBank accession no. KP3367461). Fifteen females were collected directly from coffee leaves with CoRSV symptoms in Cordeirópolis, SP-Brazil, and transferred to isolated leaves of common bean plants. Symptoms of necrotic local lesions appeared 10 days after inoculation in 50% of the plants. The presence of CoRSV was confirmed by RT-PCR in both coffee and bean leaves. Amplicons obtained from the latter were sequenced (QG979998) and found 98% identical to CoRSV sequences available in GenBank. This is the first report of common bean as an experimental host of CoRSV. *B. yothersi* has been shown to transmit cileviruses. *B. californicus* seems to be the only vector of the dichorhavirus *Orchid fleck virus*, while *B. phoenicis* sensu stricto is the vector of the tentative dichorhavirus Citrus leprosis virus N. This is the first confirmation that *B. papayensis* can transmit CiLV-C and CoRSV. This is also the first time, following the reclassification of the *B. phoenicis* group, that a transmission was demonstrated by a single species of *Brevipalpus* for both a dichorha- and a cilevirus. Since this mite species is prevalent in coffee plantations in Brazil, it is likely the main vector of CoRSV under natural conditions.



References:

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- Beard, J. J., et al. 2015. Zootaxa 3944:1. <https://doi.org/10.11646/zootaxa.3944.1.1> [Crossref] [ISI]
- Kitajima, E. W., et al. 2011. Sci. Agric. 68:503. <https://doi.org/10.1590/S0103-90162011000400017> [Crossref] [ISI]
- Kubo, K., et al. 2011. Exp. Appl. Acarol. 54:33. <https://doi.org/10.1007/s10493-011-9425-9> [Crossref] [ISI]
- Locali, E. C., et al. 2003. Plant Dis. 87:1317. <https://doi.org/10.1094/PDIS.2003.87.11.1317> [Abstract] [ISI]

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