

NEW CRYPTIC SPECIES IN *Brevipalpus* MITES, A GROUP UNDER TAXONOMIC REVIEW

A.D. Tassi¹, J.L.S. Alves², I.C.S de Oliveira², R.S. Mendonça³, D. Navia² & E.W. Kitajima¹

¹LFN, ESALQ, Universidade de São Paulo (USP), Piracicaba, SP, Brazil; ²LQV, Embrapa Recursos Genéticos e Biotecnologia, Brasília, DF, Brazil; ³Faculdade Agronomia, Universidade de Brasília, Brasília, DF, Brazil.

Flat mites of the *Brevipalpus* genus (Tenuipalpidae) include several crop pests of economic importance, specially due to the action as phytovirus vectors and their quarantine importance. Defining the taxonomic identity of organisms is a prerequisite for their study; misidentification of economically important species may lead to the application of inappropriate prevention and control strategies. *Brevipalpus* species have been repeatedly inaccurately identified, as evidenced by a recent review of *B. phoenicis* (Geijskes) which was showed to comprising a complex of eight species. In this study, we used an integrative approach that combined molecular analyses with detailed morphological identification. This was based on nucleotide sequences from four genome regions: two fragments of the gene cytochrome oxidase I (COI) mtDNA, and two nuclear ribosomal fragments, the D1 - D3 region and the ITS2 region; and the use of different methods, light microscopy and scanning electron microscopy, to study morphological traits that have recently showed to be taxonomically informative. Samples from different species and populations of *B. araucanus* Gonzalez, *B. californicus* s.l., *B. cuneanus* s.l., *B. chilensis* Gonzalez, *B. incognitus* Ferragut & Navia, *B. ferraguti* Ochoa & Beard, *B. obovatus* Donnadieu, *B. oncidii* Baker, *B. phoenicis*, *B. papayensis* Baker and *B. yothersi* Baker were studied. Results showed that there is congruence between molecular and morphological characteristics, and this integrative approach revealed the occurrence of at least 8 new cryptic species in the *Brevipalpus* genus. The description of these possible new species are ongoing, one of them from Chile belongs to *californicus* group, two to *obovatus* species group from Brazil and Argentina and the other five to *phoenicis* group occurring in Brazil and Argentina. These results emphasized the need for give continuity to a review of the species/groups in the *Brevipalpus* genus. Description of these species based on as integrative approach represents an important contribution to the *Brevipalpus* systematics.

Keywords: plant virus vectors, Tenuipalpidae, scan microscopy, DIC, molecular phylogeny.

Financial support: FAPESP (2014/08458-9).