



## ***Brevipalpus* (Tenuipalpidae) and orchid fleck virus (OFV) in South Africa: what do we know?**

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**FIGURE 1.** CL-N symptoms associated with OFV on a Valencia orange in the Sundays River Valley area of South Africa. Photo: Wayne Kirkman, 2018.

(Saccaggi *et al.* 2017). Of these, *B. californicus* is the vector of CL-N viruses and *B. yothersi* (previously a synonym of *B. phoenicis*) is the vector of CL-C viruses. However, taxonomic revisions have revealed that *B. phoenicis* and *B. californicus* are complexes of eight and three distinct species, respectively. It is unknown which of the daughter species are present in South Africa, or which of them are vectors of CL viruses.

The South African National Collection of Acari (NCA) houses a number of flat mite specimens not databased or published. The collection contains ~780 slides from southern Africa and spans 65 years, with the first specimens deposited in 1954. Upon examination, it was found that 14 different *Brevipalpus* species had been identified, although some of them were invalid species or moved to different genera. Seven of the originally identified *Brevipalpus* species were still considered valid, adding *B. ferraguti* (collected in 2017) to the list of species present in South Africa.

All specimens were re-identified using modern taxonomic literature (Beard *et al.* 2012, 2015), resulting in a current count of at least twelve *Brevipalpus* species present in South Africa, with five of these recorded from citrus. CL-vector species *B. yothersi* and *B. californicus s.l.* were among those identified from citrus. Different species occurred more commonly in different regions, with overlap between CL-vector species and high citrus production areas. Thus, South Africa is at high risk for spread of CL, with differential risk of CL-N and CL-C spread (should it enter the country) in different production areas.

Certain species of *Brevipalpus* (Trombidiformes: Tenuipalpidae) are able to transmit viruses of the citrus leprosis complex, a serious non-systemic disease of citrus. This disease is endemic to Central and South America, and is characterised by necrotic lesions with chlorotic halos on twigs, leaves and fruit. Citrus leprosis is caused by two types of RNA viruses: cytoplasmic (CL-C) and nuclear (CL-N). In South Africa, CL-N symptoms were detected in 2018 in citrus orchards in the Sundays River Valley (SRV) of the Eastern Cape (Fig 1), and found to be associated with trees testing positive for orchid fleck virus (OFV) (Cook *et al.* 2019). Mites from this site identified as *B. californicus s.l.* tested positive for OFV. It is assumed that the entry pathway of OFV virus into South Africa was via the trade of orchid pot plants, and that it was then transmitted to citrus by viruliferous *B. californicus*. This is the first CL virus-vector association and putative transmission from orchids to citrus identified in South Africa.

The literature records six species of *Brevipalpus* present in South Africa: *B. phoenicis*, *B. californicus*, *B. obovatus*, *B. ericae* (Meyer 1979), *B. lewisi* and, more recently, *B. yothersi*

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