First report of *Pineapple mealybug wilt associated virus-3* infecting pineapple in Cuba

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Pineapple (*Ananas comosus*) is a common crop in tropical and subtropical areas of the world. Crop yields are seriously affected by mealybug wilt of pineapple (MWP), a viral disease with mealybugs (*Dysmicoccus spp.*) as vectors (Sether *et al.*, 2005). Viruses associated with MWP are members of the genus *Ampelovirus*, family *Closteroviridae*. In Hawaii, *Pineapple mealybug wilt-associated virus* (*PMWaV-1*) infection has been correlated with 5 to 15% of ratoon crop yield reduction and losses of up to 30% of production due to premature or asynchronous fruit ripeness. However, in that region, the most widespread virus species is *PMWaV-2*, which causes up to 100% fruit loss (Sether & Hu, 2002). Conversely, *PMWaV-2* is uncommon in Australia, a country where MWP also causes major reduction of pineapple fruit yield. In Australia, MWP symptoms are strongly correlated with infections by *PMWaV-3* alone or by both *PMWaV-1* and -3 (Gambley *et al.*, 2008). Due to the high nucleotide identity and the conserved genome organization between *PMWaV-1* and *PMWaV-3*, it is considered that these two viruses have similar deleterious effects on either growth rate or pineapple fruit yield in Hawaii (Sether *et al.*, 2005, 2009). Currently, there are 5,310 ha of pineapple orchards in Cuba, with annual fruit production that reached 28,908 tonnes in 2009. MWP disease is an economic problem for pineapple production in the island, causing up to 40% crop losses (Anonymous, 1989). *PMWaV-2* was first detected in a diseased pineapple plant from Ciego de Avila in 1998, with molecular characterisation further provided by Borroto-Fernández *et al.*, (2007).

During a survey for *PMWaVs* in 2009, thirty pineapple plants showing typical symptoms of MWP (foliar reddening, leaves with tips curved down and dieback) were collected in the Island of Youth, western region of the country (Fig. 1). Total RNA was extracted using the Trizol LS Reagent kit (Invitrogen, Scotland, UK). RT-PCR assays for *PMWaV-1*, *PMWaV-2* and *PMWaV-3* detection were performed using the 225/226, 223/224 and 263/264 primer pairs, respectively; these amplify fragments corresponding to 490 bp) were simultaneously amplified from seventeen plants with molecular characterisation further provided by Borroto-Fernández *et al.*, (2007).

![Figure 1](image1.jpg)

**Figure 1**


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This is the first report of the presence of the *PMWaV-3* in Cuban pineapple fields and in the Caribbean basin. Noteworthy is that pineapple plants affected by MWP were infected by both *PMWaV-3* and *PMWaV-2* which suggests that a complex of amoveloviruses may be widespread in Cuban pineapple fields. Results support the need to implement certification procedures for pineapple propagation materials to reduce the economic impact of MWP disease on pineapple crops in Cuba.

**References**


