



## First report of *Potato yellow mosaic virus* infecting *Solanum americanum* in Venezuela

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*Potato yellow mosaic virus* (PYMV) is one of the most important tomato begomoviruses in the Caribbean basin (Morales *et al.*, 2006). In Venezuela, a recent survey showed that PYMV is the most widespread and prevalent begomovirus in tomato fields (Geraud-Pouey *et al.*, 2016). However, little is known about natural reservoirs of the virus. In 2007 and 2008 PYMV surveys were performed in several Venezuelan tomato fields and weeds in the genus *Solanum* showing virus-like symptoms were also collected (Fig. 1). As summarised in Table 1, nine leaf samples from solanaceous weeds were tested using PCR with PYMV-specific primers (Geraud-Pouey *et al.*, 2016). PYMV infection was detected in two plants each of *Solanum americanum* and *S. pimpinellifolium*. *Solanum pimpinellifolium* is considered a host of PYMV (Boissot *et al.*, 2008). However, *S. americanum* has not been found previously to be infected by this begomovirus. Hence, the complete sequence of DNA-A of PYMV isolates from the two *S. americanum* plants (hereafter, Tachira-949 and Lara-1203) were obtained by rolling circle-amplification (RCA) using φ29 DNA polymerase (TempliPhi kit, GE Healthcare, Germany). The RCA products were then digested with the endonuclease *Hind*III and inserted in pBluescript II (SK+) for cloning. The complete sequences of DNA-A of isolates Tachira-949 (2,597 bp) and Lara-1203 (2,596 bp) were deposited in GenBank under Accession Nos. KU665804 and KX389269, respectively. Blast analyses revealed that PYMV isolate (D00940) from Venezuela was the most closely related isolate to the isolates Tachira-949 and Lara-1203 showing 94 and 93% nucleotide identity, respectively. PYMV-like sequences in GenBank were retrieved to perform pairwise and phylogenetic analyses using Mega 6 (Tamura *et al.*, 2013). Isolates Tachira-949 and Lara-1203 shared 96% nucleotide identity and they were most related phylogenetically to PYMV isolates from Central America and Venezuela (Fig. 2). Interestingly, the two PYMV-infected *S. americanum* plants were found in geographically distant tomato production zones of the country.

Begomoviruses are transmitted by *Bemisia tabaci* which is considered a cryptic species complex. Within this complex, the polyphagous whitefly referred as Middle East Asia-Minor 1 is widespread in Venezuela (Romay

*et al.*, 2011) and its contribution to increasing the number of natural reservoirs may be speculated. Although our results suggest that *S. americanum* might be a natural host for PYMV, more extensive surveys are needed to confirm whether this weed is an important alternative host in the field.

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Figure 1

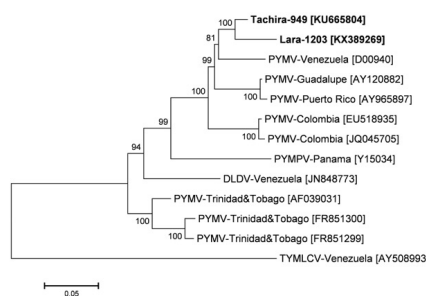


Figure 2

Table 1. Samples of wild *Solanum* species collected in tomato fields in Venezuela during 2007-2008.

Viral isolate	Year	Host species	Locality	State	Location (latitude, longitude)	Altitude (metres above sea level)	PCR detection (PYMV-specific primers)
Merida-902	2007	<i>S. hirtum</i>	La Azulita	Merida	N 8°42'24" W 91°28'33"	1100	-
Merida-906	2007	<i>S. pimpinellifolium</i>	Tucumí	Merida	N 8°54'57" W 91°13'39"	560	-
Tachira-917	2007	<i>S. americanum</i>	Joiso	Tachira	N 7°48'45" W 72°11'46"	1037	-
Tachira-939	2007	<i>S. americanum</i>	Periboa	Tachira	N 7°50'01" W 72°16'08"	1004	-
Tachira-949	2007	<i>S. americanum</i>	La Petrola	Tachira	N 7°46'01" W 72°16'08"	891	+
Tachira-955	2007	<i>S. americanum</i>	La Petrola	Tachira	N 7°46'01" W 72°16'08"	891	+
Lara-1200	2008	<i>S. pimpinellifolium</i>	El Cabredal	Lara	N 9°43'13" W 69°42'33"	1245	+
Lara-1201	2008	<i>S. pimpinellifolium</i>	El Cabredal	Lara	N 9°43'13" W 69°42'33"	1245	+
Lara-1203	2008	<i>S. americanum</i>	El Mortero	Lara	N 9°43'55" W 69°39'17"	1488	+

Figure 3

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