



First detection of papaya ringspot virus-type W and zucchini yellow mosaic virus infecting *Cucurbita maxima* in Paraguay

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Cucurbits are among the most important crops for the rural family's economies of many departments of Paraguay, due to the favorable markets at national and international level. In July 2018, mosaic, leaf deformation, chlorosis and stunting were observed in plants of *Cucurbita maxima* var. Zapallito in an experimental area located in the campus of the National University of Asuncion, San Lorenzo County, Central Department, Paraguay. The incidence of symptomatic plants was around 80% in an area of 2.500 m². Preliminary transmission electron microscopic examination of ultra-thin sections of naturally infected plants revealed the presence of inclusion bodies typical of potyvirus infections. Leaf extracts from eight symptomatic *C. maxima* plants were analyzed by plate-trapped antigen-ELISA, using specific antisera for four cucurbit-infecting viruses: cucumber mosaic virus (CMV, genus *Cucumovirus*), papaya ringspot virus-type W (PRSV-W, genus *Potyvirus*), zucchini lethal chlorosis virus (ZLCV, genus *Orthotospovirus*) and zucchini yellow mosaic virus (ZYMV, genus *Potyvirus*), which are commonly found in cucurbitaceous crops in South America (Romay et al. 2014). All antisera were produced at the University of São Paulo. All samples reacted with antisera against PRSV-W and ZYMV, indicating a mixed infection with these potyviruses. Total RNA was extracted from symptomatic leaves (TRIzol, Thermo Fisher Scientific), followed by RT-PCR using specific primers for the coat protein gene of PRSV-W (Aguiar et al. 2019), and ZYMV (Thomson et al. 1995), which amplifies

fragments of 398-and 1186-bp, respectively. Four amplicons for each virus were sequenced. In BLASTn analysis, PRSV-W amplicons (MK751456-MK751459) shared 95.65–97.95% identity with PRSV-W isolates (DQ104819, AF344642). Similarly, ZYMV amplicons (MK751460-MK751463) shared 94.78–98.78% identity with ZYMV isolates (AB004641, AJ420019). To our knowledge, this is the first detection of these potentially damaging viruses of cucurbitaceous crops in Paraguay. Future investigations are required to determine their distribution and economic impact on cucurbit production in the country.

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