First report of turnip mosaic virus on yellow passion fruit in China

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Foliar virus-disease like symptoms characterized by stunting, green-yellow mosaic or necrotic spots were observed in a yellow passion fruit orchard in Dabu county, Guangdong province, southern China in December 2019. More than seventy percent of passion fruit plants in this orchard displayed virus-disease like symptoms. Leaf samples were collected from three symptomatic passion fruit plants. To identify the potential existence of viruses infecting the passion fruit, a small RNA library was constructed by using a pooled sample composed from the three plant samples, and was sequenced on an Illumina HiSeq2500 platform (Biomarker Biology Technology Ltd. Company, Beijing, China). A total of 30,811,261 clean reads within the range of 18 to 35 nt were assembled into larger contigs using velvet software. BLASTn and BLASTX searches against GenBank identified 50 contigs (35 to 174 bp) with homology (91.15 to 100%) to turnip mosaic virus (TuMV) complete genome. These contigs covered 43.4% of TuMV genome. Sequencing also indicated the presence of cucumber mosaic virus and telosma mosaic virus, which have been reported in passion fruit (Teakle et al. 1963; Chiemsombat et al. 2014). To confirm the presence of TuMV, RT-PCR was performed using specific primers (F: 5'-GTGTATACCCCTATCTCTAC-3' [position 8074–8093] and R: 5'-ATGGGTGAGATCCTCTTGAG-3' [position 8678–8697]), which was designed to amplify the partial region of the TuMV strain BJ-C4, complete genome (GenBank accession No. HQ446217.2). The expected 624-bp amplicon was amplified from all samples. Three amplicons from the

three plant samples were cloned into the pMD19-T vector (TaKaRa, Dalian, China) and sequenced. Results showed that the three TuMV sequences were identical. Therefore, only one sequence was submitted to GenBank (MT982366). Nucleotide BLAST analysis revealed that TuMV isolate GD-Pf6 (MT982366) showed 97.44% nucleotide identity to the TuMV isolate BJ-C4 (HQ446217.2), as well as the TuMV isolate CHN 12 (AY090660.1). Additionally, the three plant samples were analyzed by ELISA using commercial kits to TuMV. Results indicated that all samples were positive for TuMV in ELISA. To our knowledge, this is the first report of TuMV on cultivated yellow passion fruit in China as well as the first report of TuMV on passion fruit in the world.

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