



## First report of Turnip yellow virus (TuYV) in Brassica juncea (Indian mustard) in India

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A survey for Turnip yellow virus (TuYV) was carried out during October-December 2012 covering the major field crops in Rajasthan, India. Fifty leaf samples with yellowing and red stripes were collected from *Brassica juncea* (Indian mustard) fields. The observed symptoms and the presence of a large number of aphids (*Myzus persicae*) indicated the presence of a virus, possibly TuYV. To confirm the presence of TuYV, total RNA was extracted from infected leaves using the TRIZOL plant mini kit (Invitrogen), according to the manufacturer's protocol. RT-PCR was performed in a single PCR tube with the reaction mixture (20 µl) containing 10 ng RNA, 1 µl of 20 pmol oligo d(T), 1 µl of 20 pmol of Luteovirus group primers Lu1 and Lu4 (Robertson *et al.*, 1991), 2 µl of 10x reaction buffer, 0.5 µl of 10 mM dNTPs, 0.5 µl of 50 mM MgCl<sub>2</sub>, 0.5 µl of AMV reverse transcriptase and 0.5 µl of Taq polymerase (3U/µl). The RT-PCR was performed in a thermal cycler with the following programme: reverse transcription at 42°C for 1 hour, initial denaturation at 94°C for 2 min, followed by 35 cycles of 94°C for 30 sec, annealing at 50°C for 1 min, extension at 72°C for 1 min and a final extension of 72°C for 10 min. An amplicon of expected size (~600 nt) (Fig. 1) was sequenced and submitted to GenBank (Accession No. KC570457, isolate RP1). BLAST analysis of the nucleotide sequence showed 91-97% identity with the corresponding region of TuYV (X13063), Beet western yellows virus (BWYV; L40015, Y11531) and TuYV isolate WA-1 (JQ862472.1).

The nucleotide sequence obtained was used to construct a phylogenetic tree using the neighbour-joining method in MEGA 4.0 tool (Tamura *et al.*, 2007) (Fig. 2). This revealed that the Turnip yellow virus isolate RP1, is closely related to TuYV (BWYV-FL1; X13063). To the best of our knowledge, this is the first report of a natural infection in *Brassica juncea* by TuYV in India and of a possible association with yellow mosaic and reddening of leaves in the same species.

### Acknowledgements

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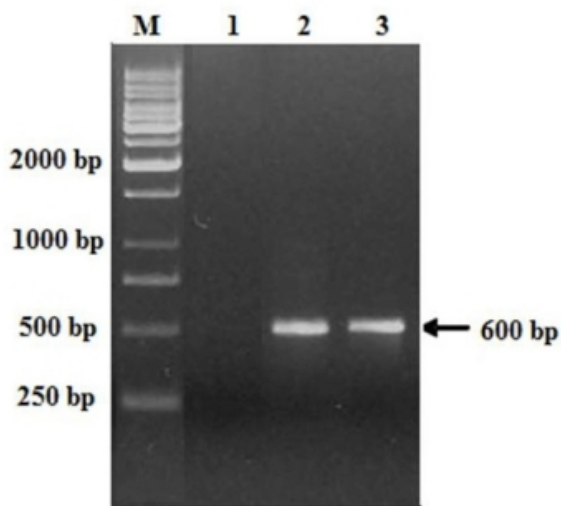


Figure 1

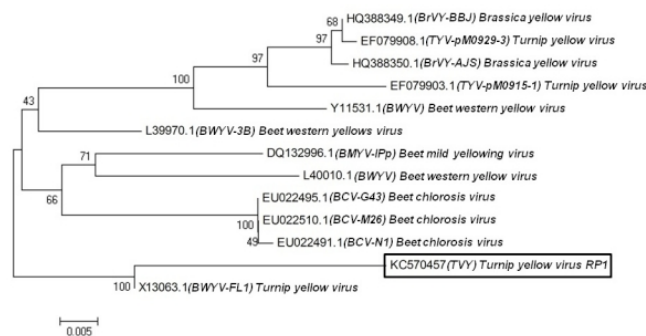


Figure 2

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