



First report of *Tobacco streak ilarvirus* infecting onion (*Allium cepa*)

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Tobacco streak ilarvirus (TSV) is a member of the genus *Iilarvirus* (family *Bromoviridae*) and consists of non-enveloped, isometric particles, approximately 25 to 35 nm in diameter. TSV has a wide host range, infecting more than 200 plant species belonging to 30 dicotyledonous and monocotyledonous plant families and its occurrence has been reported from more than 26 countries worldwide (Fulton, 1985). Since then TSV has caused serious damage to groundnut, sunflower and several other annual crops in India (Kumar *et al.*, 2006). Although the virus is widespread, destructive epidemics have been observed only in India (Prasada Rao *et al.*, 2000;2003).

Onion (*Allium cepa*) is a crop of global importance grown on 3.45 million ha with a production of approximately 64.5 million tonnes. In India it is grown in an area of 0.62 million ha with a production of 8.18 million tonnes. During March 2010, in commercial onion fields in the Kurnool district of Andhra Pradesh, India, straw coloured, irregular, necrotic lesions were observed on the young leaves and flower stalks resulting in flower abortion (Fig. 1). Leaves with symptoms tested positive for TSV by DAC-ELISA (Bhat *et al.*, 2001) using polyclonal antibodies (P. Lava Kumar, International Institute of Tropical Agriculture, Ibadan,). RT-PCR tests of leaf tissue from diseased onion plants using primers specific for the coat protein gene of TSV (Bhat *et al.*, 2002) resulted in an amplicon of the expected size (~700bp) (Fig. 2). The amplicon was cloned using the pTZ57R/T vector (Fermentas, USA), sequenced and deposited in GenBank (Accession No. HM131490). Sequence analysis (BioEdit v 7.0.5) and a comparison with 19 other TSV isolates (GenBank Accession Nos. AF515823, AY940158, AY590139, DQ864452, AY940155, DQ058079, EF159702, AY940151, AY501483, DQ864458, DQ864456, AY940157, EF159703, DQ864459, AF515825, AY510129, AM933669, DQ225172, AY501484) showed identities of between 86 and 99% (nt) and between 87 and 100% (aa). To our knowledge this is the first report of onion as a host of TSV. The infected crop was removed and measures taken to eradicate the infection completely. A drastic reduction in bulb size and necrosis of bulbs (Fig. 3), wilting and necrosis of plants leading to reduction in yield was observed in TSV infected onion fields. Intercropping of onion with

groundnut, chilli and other vegetable crops, a regular practice in India, further increases the possibility of spread of TSV infection from onion to onion and to other crops. TSV spreads easily in the fields through pollen assisted by thrips, by mechanical transmission. Hence implementing control measures for TSV infection becomes difficult due to wide host range and presence of efficient vectors throughout the crop period.

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Figure 1

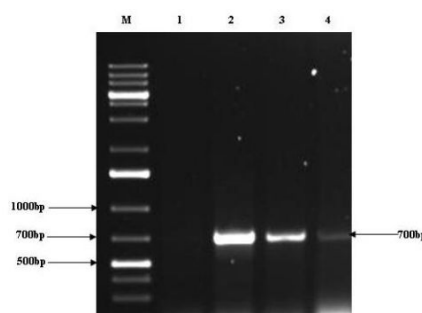


Figure 2



Figure 3

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