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# plant disease

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## DISEASE NOTES

### First Report of *Zucchini yellow mosaic virus* in Snake Gourd (*Trichosanthes cucumerina*) in India

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*Zucchini yellow mosaic virus* (ZYMV, genus *Potyvirus*, family *Potyviridae*) infects several types of cucurbits and causes severe losses to their production worldwide (2,3). Snake gourd (*Trichosanthes cucumerina* L.) is a cucurbitaceous vegetable, probably originated and domesticated in India (4). It is cultivated widely in South India by farmers for domestic consumption and as a source of family income. While conducting field surveys during 2013 and 2014 to document virus diseases in cucurbitaceous crops in Tamil Nadu, India, snake gourds exhibiting mosaic and malformation of leaves were found in farmers' fields in Tirunelveli (isolate TN TNV SG1), Tindivanam (Vilupuram, isolate TN TDV SG1), Udumalpet (Tiruppur, isolate TN UDU SG1), and Anamalai (Coimbatore, isolate TN ANA SG2). The disease incidence in these locations was variable, ranging between 32 and 58%. Symptomatic leaves from five plants from each location were tested by DAS-ELISA for the presence of ZYMV using polyclonal antibodies (DSMZ, Germany) and ZYMV-specific immunostrips (Agdia Inc., Elkhart, IN). All symptomatic samples tested positive for ZYMV, whereas asymptomatic samples were negative. For further confirmation, total RNA was extracted from symptomatic and asymptomatic leaves of snake gourd using Trizol reagent (Sigma Aldrich, USA). Total RNA was subjected to reverse-transcription-polymerase chain reaction (RT-PCR) using primers (GK ZYMV F: 5'-ATAGCTGAGACAGCACT-3' and GK ZYMV R2: 5'-CGGCAGCRAAACGATAACCT-3') designed from GenBank Accession No. AB369279. The approximately 1,000-base-pair fragment specific to the coat protein region of the ZYMV genome was amplified only from symptomatic samples. The amplicons obtained from the four isolates mentioned above were cloned using pGEM-T Easy Vector System (Promega Corporation, WI). Two independent

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clones per isolate were sequenced in both orientations. Multiple alignment of nucleotide sequences derived from isolates TN TNV SG1, TN TDV SG1, TN UDU SG1, and TN ANA SG2 (KJ866938, KJ729042, KJ729041, and KJ729044, respectively) with corresponding sequences of ZYMV available in GenBank revealed 99% identity with ZYMV reported from Iran (JN183062) and 98% identity with virus isolates reported from India (GQ482976, JF797206, and KJ614229). These results confirmed the presence of ZYMV in symptomatic plants of snake gourds. The occurrence of ZYMV has been reported previously in snake gourd in Brazil (4) and in cucumber, pumpkin, bitter melon, potato, gherkins, musk melon, and *Amarathus viridis* in India (1). To our knowledge, this is the first confirmed report of the occurrence of ZYMV on snake gourd in India. Since ZYMV is known to be transmissible by seed and aphid vectors (2,3), the results offer a foundation for increasing awareness of virus spread and encouraging commercial seed supply chains to supply virus-free seed for farmers to produce snake gourds with high nutritive value.

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Section: 

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