Disease Note

FIRST REPORT OF *GARLIC VIRUS D* INFECTING ONION IN INDIA

I. Khan[1], A. Sharma[2], A.S. Dhatt[2], S.S. Kang[1] and G. Kaur[2]

[1]*Department of Plant Pathology, Punjab Agricultural University, Ludhiana, India-141004*
[2]*Department of Vegetable Science, Punjab Agricultural University, Ludhiana, India*

Onion (*Allium cepa* L.), a major vegetable crop of which India is the second largest producer in the world, is affected by more than 20 viruses of the genera *Allexivirus*, *Carlavirus*, *Potyvirus*, and *Tospovirus* (Maliogka *et al*., 2006). Plants with mild mosaic, or mild chlorotic stripes, or no symptoms were collected in March 2014 from the vegetable research farm of Punjab Agricultural University. Five of 10 plants tested by ELISA using an *Onion yellow dwarf virus* (OYDV) specific antiserum (Agdia, USA) gave a positive reaction. Because mite-borne allexiviruses infect *Allium* species around the world (Perotto *et al*., 2010), the same 10 plants were tested using primers Allex1 and Allex2 (Dovas *et al*., 2001). Of the eight positive samples, four were also OYDV-positive. PCR amplicons of 200 bp were purified using Nucleospin Gel and PCR clean-up kit (Macherey-Nagel, Germany), and cloned into pGEM-T easy vector (Promega, USA). Sequences from all eight were identical showing 86% nucleotide (nt) identity with *Garlic virus D* (GarVD) (KF550407) and 94% with *Shallot virus X* (M97264). A combination of Allex-cp(+) (Chen *et al*., 2004) and Allex2 was used in PCR, which generated a 900 bp amplicon from the coat protein/nucleic acid binding protein (CP/NABP) region of allexiviruses. The cloned amplicons (KR534889) showed 87% overall nt identity and 94% amino acid identity to the CP and 86% to the NABP regions of a GarVD isolate (HQ681944) from Iran. Plants infected with GarVD showed mild chlorotic stripe, while those doubly infected with both OYDV and GarVD showed mosaic. To the best of our knowledge, this is the first report of GarVD from onion in India.

Chen J., Zheng H.Y., Antoniw J.F., Adams M.J., Chen J.P., Lin L., 2004. Detection and classification of allexiviruses from garlic in China. *Archives of Virology* **149**: 435-445.

Dovas C.I., Hatzibukas E., Salomon R., Barg E., Shiboleth Y.M., Katis N.I., 2001. Comparison of methods for virus detection in Allium spp. *Journal of Phytopathology* **149**: 731-737.

Maliogka V.I., Dovas C.I., Lesemann D.E., Winter S., Katis N.I., 2006. Molecular identification, reverse transcription-polymerase chain reaction detection, host reactions, and specific cytopathology of *Artichoke yellow ringspot virus* infecting onion crops. *Phytopathology* **96**: 622-629.

Perotto M.C., Cafrune E.E., Conci V.C., 2010. The effect of additional viral infections on garlic plants initially infected with Allexiviruses. *European Journal of Plant Pathology* **126**: 489-495.

Corresponding author: I. Khan
E-mail: kkirfan786@gmail.com

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Disease Note

FIRST REPORT OF *PLEOSPORA TARDA* CAUSING LEAF SPOT OF *LEPIDIUM DRABA* IN IRAN

P. Razaghi[1] and D. Zafari[2]

[1]*Faculty of Agriculture, Bu-Ali Sina University, Hamedan, Iran*
[2]*Department of Plant Pathology, Faculty of Agriculture, Bu-Ali Sina University, Hamedan, Iran*

Since 2009, leaf spot symptoms were observed on *Lepidium draba* (whitetop), an invasive weed collected in wheat plots (*Triticum* sp.) in the Hamadan Province of Iran. Typical symptoms included chlorosis of the basal leaves with black discrete ascomata protruding from the leaf surface. Colonies of a fungus recovered from diseases leaves were brown to olivaceous with a white aerial mycelium in the center. Since the morphological characters of this mycete were consistent with the description of *Pleospora tarda* (Simmons, 1985), its identification was confirmed by amplifying and sequencing the internal transcribed spacer region (ITS) of a representative isolate (GenBank accession No. KC660992). To fulfill Koch's postulates, a spore suspension (10^5 ascospores/ml) of the fungus was sprayed onto leaves of whitetop seedlings at the 4-6 leaf stage. Inoculated seedlings were maintained in a growth chamber at 25°C, with more than 75% relative humidity and a 12 h light photoperiod. Inoculated plants showed symptoms like those observed in the field 14 days post inoculation. *P. tarda* was reisolated from inoculated plants and a culture was deposited in the Iranian Research Institute of Plant Protection with the accession code IRAN 2184C. To our knowledge, this is the first report of *P. tarda* infecting whitetop in Iran and in the world.

Simmons E.G., 1985. Perfect states of Stemphylium II. *Sydowia* **38**: 284-293.

Corresponding author: P. Razaghi
E-mail: razaghi_1986@ymail.com

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