



First report of *Iris yellow spot virus* in onions (*Allium cepa*) in Austria

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In July 2009, onion plants (*Allium cepa* var. *cepa* cv. 'Tonda Musona') were observed in the Austrian province of Burgenland showing leaf symptoms with irregularly shaped, chlorotic or necrotic lesions. Examination of the onion plants also revealed an infestation with onion thrips (*Thrips tabaci*). The leaf symptoms and the presence of onion thrips aroused the suspicion of an infection with *Iris yellow spot virus* (IYSV). The onion samples were tested for IYSV using two different commercial double-antibody sandwich (DAS) ELISA diagnostic assays (Agdia Inc., Elkhart, USA; Loewe Biochemica, Sauerlach, Germany). The samples tested positive with DAS-ELISA, and this was verified using reverse transcription polymerase chain reaction (RT-PCR). Total RNA was extracted from leaf lesions using the RNeasy Plant Mini Kit (Qiagen, Hilden, Germany). Primer IYSV-459 (5'-ACCAGAGGAAGCCCGCAG-3') binding to the nucleocapsid (N) gene and TOS-R15 (5'-GGGAGAGCAATYGGWKYR-3') binding to the 3'-untranslated sequence of the S RNA (Uga & Tsuda, 2005) were used for RT-PCR and for sequencing the amplification product of expected size (459 bp). Sequence comparison revealed 97% identity to known N gene sequences of IYSV deposited in GenBank (GenBank Accession Nos. AF001387, FJ785835, AM900393).

Since its original description in 1998 (Cortês *et al.*, 1998) IYSV has become pandemic in areas of onion bulb and seed production in the United States (Gent *et al.*, 2006). Occurrence of IYSV has also been recorded in several European countries such as France, Germany, Italy, the Netherlands, Poland, Serbia, Slovenia, Spain, and the UK (Bulajić *et al.*, 2009). To our knowledge this is the first report of IYSV presence in Austria. To follow up on this finding, a survey was carried out in the autumn of 2009 in Lower Austria, the centre of Austrian onion production. Twenty-six samples from fifteen locations were tested with both DAS-ELISA assays. One sample of cv. 'Drago' was found positive for IYSV. In Austria immature bulbing onions (*A. cepa*) with green leaves are usually marketed as spring onions or green onions in place of bunching onions (*A. fistulosum*). Cultivar 'Tonda Musona' is especially popular as a

spring onion. Leaf symptoms like those caused by IYSV (Fig. 1) seriously affect market quality. In the summer of 2010, locally produced spring onions with typical leaf symptoms were consistently found on the Austrian market. Eight suspicious onion samples were randomly investigated and six were found positive for IYSV in RT-PCR assay. Investigations on geographical distribution and frequency of IYSV infections in Austria as well as the analysis of possible infections in other hosts are in progress.

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References

- Bulajić A, Djekić I, Jović J, Krnjajić S, Vučurović A, Krstić B, 2009. Incidence and distribution of *Iris yellow spot virus* on onion in Serbia. *Plant Disease* **93**, 976-982. [doi:10.1094/PDIS-93-10-0976]
- Cortês I, Livieratos IC, Derks A, Peters D, Kormelink R, 1998. Molecular and serological characterization of *Iris yellow spot virus*, a new and distinct tospovirus species. *Phytopathology* **88**, 1276-1282. doi:10.1094/PHYTO.1998.88.12.1276 [doi:10.1094/PHYTO.1998.88.12.1276]
- Gent DH, du Toit LJ, Fichtner SF, Mohan SK, Pappu HR, Schwartz HF, 2006. *Iris yellow spot virus*: An emerging threat to onion bulb and seed production. *Plant Disease* **90**, 1468-1480. [doi:10.1094/PD-90-1468]
- Uga H, Tsuda S, 2005. A one-step reverse transcription-polymerase chain reaction system for the simultaneous detection and identification of multiple tospovirus infections. *Phytopathology* **95**, 166-171. [doi:10.1094/PHYTO-95-0166]



Figure 1

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