



First report of *Impatiens necrotic spot virus* on *Ocimum basilicum*, *Eruca sativa* and *Anthriscus cerefolium* in Austria

S. Grausgruber-Gröger*

Austrian Agency for Health and Food Safety (AGES), Institute for Sustainable Plant Production, Spargelfeldstrasse 191, 1220 Vienna, Austria

*E-mail: sabine.grausgruber-groeger@ages.at

Received: 16 May 2012. Published: 15 Sep 2012.

Impatiens necrotic spot virus (genus *Tospovirus*), a major pathogen of flower crops (Daughtrey *et al.*, 1997), has recently been reported also to infect vegetables and other edible crops including spinach, lettuce, pepper, peanut and potato (Koike *et al.*, 2008, Liu *et al.*, 2009). In April 2011 chlorotic and necrotic leaf spots (Fig. 1) appeared on basil plants (*Ocimum basilicum*) growing in a commercial greenhouse facility in Lower Austria.

Between 70 to 80% of the plants showed symptoms and the degree of leaf necrosis rendered the crop unsalable as fresh cut herbs. Macroscopic examination of the plants revealed the presence of *Frankliniella occidentalis* arousing the suspicion of a tospovirus infection. As a consequence the plants were tested using RT-PCR for *Tomato spotted wilt virus* (TSWV) and *Impatiens necrotic spot virus* (INSV), both vectored by this thrips species. In addition, as the plants showed interveinal chlorosis, previously described as the symptoms of *Pepino mosaic virus* (PepMV) on basil by Davino *et al.* (2009), the plants were also tested for this virus.

Total RNA was extracted from leaves showing symptoms using the RNeasy Plant Mini Kit (Qiagen, Hilden, Germany). To screen for infection with tospoviruses, primers S1 UNIV and S2 UNIV (Mumford *et al.*, 1996) were used. These primers are designed to amplify a portion of the viral S RNA of TSWV, INSV and other tospoviruses. An amplification product of 871 bp was obtained and sequenced (GenBank Accession No. JQ724132), and the sequence comparison revealed 99% identity to known sequences of INSV deposited in GenBank (D00914, X66972, FN400772). The samples tested negative for PepMV using the primers of Hasiów *et al.* (2008).

In the same greenhouse, rocket (*Eruca sativa*), chervil (*Anthriscus cerefolium*) and a mixture of oriental greens were also being grown.

Necrotic spots were found also on rocket (Fig. 2) and chervil plants. Rocket and chervil leaves with symptoms and a pooled leaf sample of oriental greens were investigated for INSV using RT-PCR. All samples tested positive for INSV and the amplification products from rocket and chervil yielded sequences (GenBank Accession Nos. JQ724130 and JQ724131) that were 100% identical to that of INSV identified on the

infected basil.

Since the herbs were not marketable, all the plants had to be destroyed and the greenhouse was cleared and disinfected. To our knowledge this is the first report of INSV infecting *Ocimum basilicum*, *Eruca sativa* and *Anthriscus cerefolium* in Austria. These results show, that besides flower crops and vegetables, INSV can also be a pathogen with detrimental effect on herbs grown under glass.

References

- Daughtrey ML, Jones RK, Moyer JW, Daub ME, Baker JR, 1997. Tospoviruses strike the greenhouse industry: INSV has become a major pathogen on flower crops. *Plant Disease* **81**, 1221-1230. [<http://dx.doi.org/10.1094/PDIS.1997.81.11.1220>]
- Davino S, Accotto GP, Masenga V, Torta L, Davino M, 2009. Basil (*Ocimum basilicum*), a new host of *Pepino mosaic virus*. *Plant Pathology* **58**, 407. [<http://dx.doi.org/10.1111/j.1365-3059.2009.02026.x>]
- Hasiów B, Borodynko N, Pospieszny H, 2008. Development of a real time RT-PCR assay for detecting genetically different *Pepino mosaic virus* isolates. *Journal of Plant Protection Research* **48**, 295-302. [<http://dx.doi.org/10.2478/v10045-008-0038-1>]
- Koike ST, Kuo YW, Rojas MR, Gilbertson RL, 2008. First report of *Impatiens necrotic spot virus* infecting lettuce in California. *Plant Disease* **92**, 1248. [<http://dx.doi.org/10.1094/PDIS-92-8-1248A>]
- Liu HY, Sears JL, Mou B, 2009. Spinach (*Spinacia oleracea*) is a new natural host of *Impatiens necrotic spot virus* in California. *Plant Disease* **93**, 673. [<http://dx.doi.org/10.1094/PDIS-93-6-0673C>]
- Mumford RA, Barker I, Wood KR, 1996. An improved method for the detection of *Tospoviruses* using the polymerase chain reaction. *Journal of Virological Methods* **57**, 109-115. [[http://dx.doi.org/10.1016/0166-0934\(95\)01975-8](http://dx.doi.org/10.1016/0166-0934(95)01975-8)]



Figure 1



Figure 2

To cite this report: Grausgruber-Gröger S, 2012. First report of *Impatiens necrotic spot virus* on *Ocimum basilicum*, *Eruca sativa* and *Anthriscus cerefolium* in Austria. *New Disease Reports* **26**, 12. [<http://dx.doi.org/10.5197/j.2044-0588.2012.026.012>]

©2012 The Authors

This report was published on-line at www.ndrs.org.uk where high quality versions of the figures can be found.