

## Incidence of hop stunt viroid (HSVd) on stone fruit trees in different Mediterranean countries

Pallás V., Canizares M.C., Myrta A.

*in*

Di Terlizzi B. (ed.), Myrta A. (ed.), Savino V. (ed.).  
Stone fruit viruses and certification in the Mediterranean countries: problems and prospects

Bari : CIHEAM

Options Méditerranéennes : Série B. Etudes et Recherches; n. 19

1998

pages 221-223

Article available on line / Article disponible en ligne à l'adresse :

<http://om.ciheam.org/article.php?IDPDF=99001755>

To cite this article / Pour citer cet article

Pallás V., Canizares M.C., Myrta A. **Incidence of hop stunt viroid (HSVd) on stone fruit trees in different Mediterranean countries.** In : Di Terlizzi B. (ed.), Myrta A. (ed.), Savino V. (ed.). *Stone fruit viruses and certification in the Mediterranean countries: problems and prospects.* Bari : CIHEAM, 1998. p. 221-223 (Options Méditerranéennes : Série B. Etudes et Recherches; n. 19)



<http://www.ciheam.org/>  
<http://om.ciheam.org/>

# Incidence of hop stunt viroid (HSVd) on stone fruit trees in different Mediterranean countries

**Vicente PALLÁS**

**M. Carmen CAÑIZARES**

CEBAS - CSIC

Murcia (Spain)

**Arben MYRTA**

Ministry of Agriculture and Food

Tirana (Albania)

**Marica GATT**

Department of Agriculture

Plant Health Division

Lija (Malta)

**Ioannis GAVRIEL**

Department of Agriculture

Plant Protection Section

Nicosia (Cyprus)

**Christina VARVERI**

Benaki Phytopathological Institute

Kiphissia

Athens (Greece)

**Sead SABANADZOVIC**

Istituto Agronomico Mediterraneo

Valenzano, Bari (Italy)

**Biagio DI TERLIZZI**

Istituto Agronomico Mediterraneo

Valenzano, Bari (Italy)

**M'barek SRHIRI**

Ministère de l'Agriculture et

de la Mise en Valeur Agricole

Rabat (Morocco)

**Kadriye ÇAGLAYAN**

Plant Protection Department

Mustafa Kemal University

Antakya, Hatay (Turkey)

**Vito SAVINO**

Dipartimento di Protezione

delle Piante dalle Malattie

University of Bari (Italy)

Viroids are subviral plant pathogens whose genome consists of a small (240-370 nucleotide residues) circular RNA with a high degree of self-complementarity in its sequence (Diener, 1991; Flores *et al.*, 1997). In some well characterized examples, it was demonstrated that viroid infection cause plant diseases which affect agronomic quality. Hop stunt viroid (HSVd), as its name indicate, was first described as the causal agent of a stunt disease of hops in Japan, but since, has been found in several plant species, most of them fruit trees like citrus, pear, peach or plum (Shikata, 1990). These plants either showed specific disorders or were symptomless. The diseases known as cachexia of citrus (Diener *et al.*, 1988; Semancik *et*

al.,1988; Levy and Hadidi, 1993) and dapple fruit of plums and peaches (Sano *et al.*,1989) were associated with sequence variants of HSVd. Previous results indicated the presence of HSVd in additional hosts such as apricot, almond and pomegranate (Astruc *et al.*, 1996; Kofalvi *et al.*, 1997; Cañizares *et al.*, 1998, 1999) on the basis of detection of HSVd by nonradioactive molecular hybridisation.

An extensive survey in field-grown apricot trees in the productive areas of Murcia (Spain) demonstrate that 81% of apricots were infected with this viroid (Cañizares *et al.*, 1998).

In an attempt to further evaluate the presence of the HSVd in the different Mediterranean countries, we assayed apricot trees by applying the non-radioactive molecular detection technique for viroid detection. Samples from apricot trees were collected during the spring of 1997 and 1998 from Morocco, Turkey, Cyprus, Albania, Malta and Greece and then processed.

Results showed that HSVd was present in Morocco (in 3 of 50 samples), in Turkey (in 1 of 49), in Greece (in 3 of 69 samples) and in Cyprus (in 9 of 86 samples). The viroid was not detected in Albania (in 15 samples) and Malta (in 19 samples). These results were confirmed by Northern blot analysis and RT-PCR. A detailed characterisation of the new isolates recovered on survey is in progress.

## References

- ASTRUC, N., MARCOS, J.F., MACQUAIRE, G., CANDRESSE, T. and V. PALLÁS (1996). Studies on the diagnosis of hop stunt viroid in fruit trees: Identification of new hosts and application of a nucleic acid extraction procedure based on non-organic solvents. *European Journal of Plant Pathology*, 102: 837-846.
- CAÑIZARES, M.C., MARCOS, J.F. and V. PALLÁS (1998). Studies on the incidence of hop stunt viroid in apricot trees (*Prunus armeniaca*) by using an easy and short extraction method to analyze a large number of samples. *Acta Horticulturae*, 472 (1): 581-587.
- CAÑIZARES, M.C. , MARCOS, J.F. and V. PALLÁS (1999). Molecular characterization of an almond isolate of hop stunt viroid (HSVd) and conditions for eliminating spurious hybridization in its diagnosis in almond samples. *European Journal of Plant Pathology* (in press).
- DIENER, T. (1991). Subviral pathogens of plants: viroids and viroid-like satellite RNAs. *FASEB J.* 5: 2808-2813.
- DIENER, T., SMITH, D., HAMMOND, R., ALBANESE, G., LA ROSA, R. and M. DAVINO (1988). Citrus B viroid identified as a strain of hop stunt viroid. *Plant Disease*, 72: 691-693.
- FLORES, R., DI SERIO, F. and C. HERNÁNDEZ (1997). Viroids: The noncoding genomes. *Seminars in Virology*, 8, 65-73.
- KOFALVI, S., MARCOS, J.F., CAÑIZARES, M.C., PALLÁS, V. and T. CANDRESSE (1997). Hop stunt viroid (HSVd) sequence variants from *Prunus* species: evidence for recombination between HSVd isolates. *Journal of General Virology*, 78: 3177-3186.

- LEVY, L. and A. HADIDI (1993). Direct nucleotide sequencing of PCR-amplified DNAs of the closely related citrus viroids IIa and IIb (Cachexia). *In: Proceedings of the 12<sup>th</sup> Conference of the International Organization of Citrus Virologists, Riverside*, 180-186.
- SANO, T., HATAYA, T., TERAI, Y. and E. SHIKATA (1989). Hop stunt viroid strains from dapple fruit disease of plum and peach in Japan. *Journal of General Virology*, 70: 1311-1319.
- SEMANCIK, J., ROISTACHER, C., RIVERA-BUSTAMANTE, R. and N. DURÁN-VILA (1988). Citrus cachexia viroid, a new viroid of citrus: relationship to viroids of the exocortis disease complex. *Journal of General Virology*, 69: 3059-3068.
- SHIKATA, E. (1990). New viroids from Japan. *Seminars in Virology*, 1: 107-115.