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Citrus tristeza virus (CTV) in the State of Montenegro

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Abstract. Citrus production in the Montenegro State is mainly concentrated in the coastal area with predominance of satsumas and lemons varieties. Citrus tristeza virus was detected in several trees but symptoms are mostly absent due to the traditional grafting of citrus plants onto a CTV tolerant rootstocks, *Poncirus trifoliata*. Over the years, CTV has been continuously spreading by the propagation of infected material.

Keywords. Citrus – Citrus tristeza virus – Montenegro – *Poncirus trifoliata* – Satsuma.

Le virus de la tristezza des agrumes (CTV) au Monténégro

Résumé. Au Monténégro, la production d'agrumes est essentiellement concentrée dans la zone côtière, où prédominent les variétés de satsuma et citronnier. Le virus de la tristezza des agrumes a été décelé chez plusieurs arbres, mais les symptômes sont assez rares étant donné que, traditionnellement, le greffage a été effectué sur un porte-greffe tolérant au CTV, le *Poncirus trifoliata*. Dans le temps, le CTV a été disséminé sans arrêt par la diffusion du matériel de multiplication infecté.

Mots-clés. Agrumes – Virus de la tristezza des agrumes – Monténégro – *Poncirus trifoliata* – Satsuma.

I – Introduction

Citrus production in the State Union of Serbia and Montenegro has a strategic importance for the agricultural sector. About 400,000 trees are now grown in the major citrus producing region which is the coastal area of Montenegro. Satsumas and lemons grafted on *Poncirus trifoliata* are the most cultivated varieties. About one third of these are new plantations.

II – Historical note on the detection of CTV

Sudden and serious decrease in citrus yield was detected during the 2003 harvest ranging between 10 and 60 % in some areas. Affected trees were showing bark-gummosis, leaf yellowing and strong deformation of the fruits. In December, eight samples, taken from the coastal region close to the towns of Bar and Ulcinj, were analyzed by ELISA and Immunocapture RT-PCR targeting the whole coat protein (CP) gene, according to standard protocols. Seven out of the eight samples analyzed were found to be CTV infected by both techniques, including two samples that were symptomless.

The PCR products of two samples were cloned in *E. coli* cells and the CP inserts analyzed by SSCP and sequencing. In both cases, the SSCP analysis of several clones indicated a variety of different patterns, suggesting the occurrence of infections with a mixture of genomic variants. Sequence analysis of different variants showed a true-to-type CP gene with 669 nucleotides. One sequence obtained was deposited at the GenBank under the accession number AY764154. This genomic variant is closely related (1.5 % distance) to the mild strain T30 from Florida (GenBank accession AF260651). However, other sequences obtained differed as much as 7 % from this one

and were closer to others from Croatian isolates. Although a very small number of samples were analyzed in this study, CTV appears to be common in the Satsuma groves. This could be due to the traditional use of the trifoliate rootstock which prevents the appearance of tristeza decline, thus enabling the unnoticed propagation of infected material. The fact that symptomless trees are also infected, and the kind of symptoms referred, which are not typical for CTV, suggests that the virus is not responsible for the symptoms observed in the field. Most of these data were previously published in Papic *et al.* (2005).

References

Papic T., Santos C., Nolasco G., 2005. First Report of Citrus Tristeza virus (CTV) in the State Union of Serbia and Montenegro. *Plant disease* 89: 434.