

PP 35 - Spread of GPGV-associated disease in two vineyards in Trentino (Italy)

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INTRODUCTION

Symptoms of chlorotic mottling, stunting and leaf deformation in cultivars Pinot gris and Traminer were reported in Trentino since 2003. In 2011, a new virus, named *Grapevine Pinot Gris Virus* (GPGV) was identified by deep sequencing and shown to be likely associated with the disease (Giampetruzzi *et al.*, 2012). Subsequently, GPGV was detected in Friuli Venezia Giulia, Veneto, Emilia Romagna, Lombardia and Apulia and, outside of Italy, in Slovakia and Czech Republic (Glasa *et al.*, 2014), Slovenia (Mavric Plesko *et al.*, 2014), France (Beuve *et al.*, 2015), Greece and South Korea (Cho *et al.*, 2013). In this latter country symptoms being partially different for they recalled the necrosis of berries observed in vines infected with the related trichovirus *Grapevine berry inner necrosis virus* (GINV).

The present work analyzed the spread of the GPGV-associated disease in two vineyards in Trentino on the cvs P. gris and Traminer, during seven and six years, respectively.

MATERIALS AND METHODS

Vineyards

Location: Zablani (Mezzocorona, Trento)

This vineyard was planted in 2003 and 2005, with the cv. P. gris grafted onto SO4 rootstocks. The plot contains 1053 vines and is trained with the Guyot training system. All vines were inspected for the presence of symptoms of leaf mottling and deformation every year between 2009 and 2015 in May and June .

In addition, 10 symptomatic (A) and 10 asymptomatic (N) vines were tested by RT-PCR every year from 2011 to 2014 for the presence of GPGV and in 2012, 2013 and 2014 for the presence of viruses regulated in the Italian certification system [i.e. *Grapevine virus A* (GVA), *Grapevine virus B* (GVB), *Grapevine leafroll-associated virus 1, 2, 3* (GLRaV-1, -2, -3), *Grapevine fanleaf virus* (GFLV), *Grapevine fleck virus* (GFkV) and *Arabis mosaic virus* (ArMV)].

Location: Coveli (Faedo, Trento)

This vineyard was planted in 2003, with the cv. Traminer grafted onto different rootstocks. The plot contains 1106 vines and is trained with the "pergola Trentina" training system. All vines were inspected for the presence of symptoms of leaf mottling and deformation every year between 2010 and 2015 in May and June. In addition, 8 symptomatic (A) and 9 asymptomatic (N) vines were tested for the presence of GPGV and the Italian-regulated viruses as above described.

Survey for disease and virus detection:

Symptoms were ranked on a three-scale, mild, medium and high, according to their severity and extent of canopy involved. Total RNA extraction, cDNA synthesis and RT-PCR for Italian-regulated viruses, were done according to Faggioli *et al.* (2012). GPGV was detected by RT-PCR according to Giampetruzzi *et al.* (2012) and Saldarelli *et al.* (2015).

RESULTS AND DISCUSSION

The spatial distribution of vines showing symptoms during the observed periods shows a similar progress in both vineyards consisting in an initial active expansion, which reaches a plateau. Particularly, the incidence of symptomatic grapevines in the cv. P. gris and Traminer vineyards, increases from 13.3% to 33.9% and from 2.7% to 6.78% during the first 4 and 5 years of observation, respectively. After this initial increase percentages of vines showing symptoms did not increase further and remain stable around these values resulting in 2015 percentages of diseased vines of 34.5% and 6.3% in P. gris and Traminer vineyards, respectively. Furthermore, the spatial distribution of symptomatic grapevines showed an aggregated pattern, suggesting a slow vine-to-vine spread within single rows.

RT-PCR assays showed that GPGV was present in all initial 10 symptomatic and 10 symptomless *P. gris* vines but, throughout the 7 years of observations, 4 out the 10 symptomless vines started showing symptoms of variable severity. Similar assays in selected cv Traminer vines detected GPGV in all 8 symptomatic and 4 out of 9 symptomless plants. However, among these 4 initially symptomless vines, two GPGV-infected plants, started to display symptoms throughout the time of observation.

These new symptomatic vines occurred, in the *P. gris* vineyard, close to the existing diseased vines whereas, in the cv Traminer vineyard their appearance was random. Besides, all vines were free of all the Italian regulated-viruses.

The present study suggests that GPGV was initially introduced in the two vineyards with infected plant material for diseased vines occur in aggregated spots. The existence of a slow-moving putative vector in GPGV transmission cannot be excluded since newly diseased vines emerged close to existing ones. Appearance of symptoms in GPGV-infected but initially symptomless vines is likely explained by a shift or superinfection of viral variants from symptomless to symptomatic as suggested by Saldarelli *et al.* (2015) and Bianchi *et al.* (2015).

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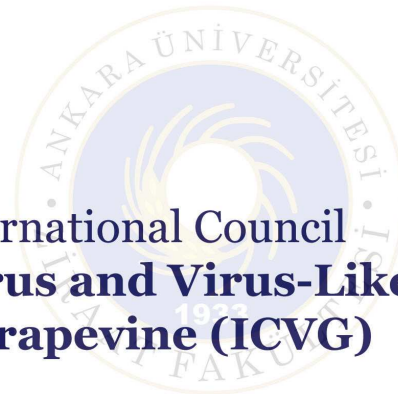
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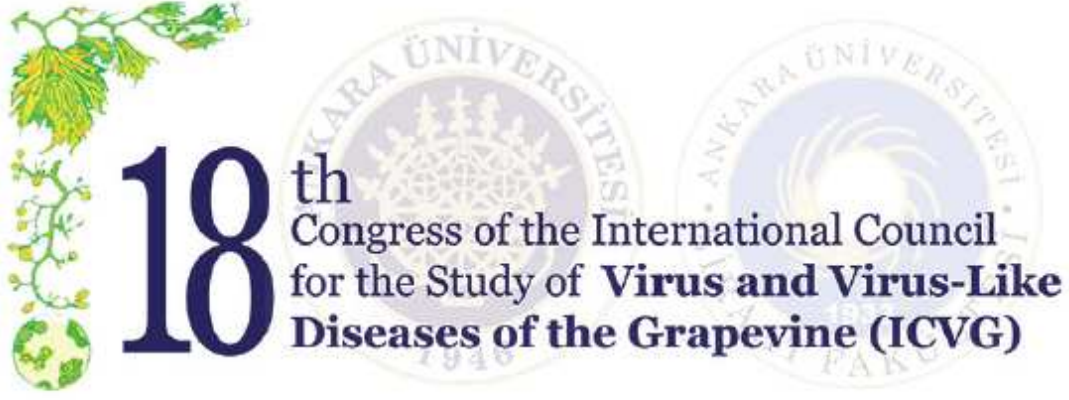
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PROCEEDINGS

September 7,11, 2015 Ankara - Turkey





Dear Colleagues

It will a great pleasure for me to invite you to 18th Congress of the International Council for the Study of Virus and Virus-like Diseases of the Grapevine (ICVG) which will be held in Ankara on 7-11 September, 2015. This will be the first meeting of ICVG in Turkey. Its venue will be Sheraton Hotel in Ankara. We feel honored to host this meeting, and hope that you will enjoy the scientific presentations, networking opportunities, field trips and our beautiful city of Ankara.

Hoping to seeing you in Ankara,

Prof. Dr. Filiz ERTUNÇ

Chair, 18th ICVG Organizing Committee

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