



## Grapevine Pinot Gris Virus



Figure 1. Grapevine Pinot Gris Virus symptoms including leaf mottling and deformation. Source: Dr. Pasquale Saldarelli, Senior Scientist/Virologist, Istituto per la Protezione Sostenibile delle Piante, Bari, Italy.

### Grapevine Pinot Gris Virus

Grapevine Pinot Gris Virus (GPGV) is a virus recently detected in grapevines in Australia. GPGV was originally detected overseas in 2012 in the variety Pinot Gris; however, it has not been detected in Pinot Gris in Australia.

Grapevine Pinot Gris Virus (GPGV) is a member of the genus *Trichovirus* in the family *Betaflexiviridae*. It is a recent scientific discovery and the origin of the virus is unknown. There are multiple, genetically distinct isolates of GPGV that have been detected in diseased and symptomless grapevines. There is limited information available on links between symptoms and the presence of specific GPGV isolates. This means that the presence of GPGV may not predict symptoms. The full impact of GPGV on vine health is currently unknown. Further research is required to fully determine the action and impact of the virus.



GPGV has been reported in China, Croatia, Canada, Georgia, Germany, Italy, France, Korea, Slovenia, Czech Republic, Slovak Republic, Greece, USA and Turkey and has been confirmed in at least 28 wine and table grape varieties including Pinot Gris, Pinot Noir, Traminer, Chardonnay, Merlot, Cabernet Franc, Cabernet Sauvignon, Carmenere, Glera (Prosecco), Sauvignon Blanc and Shiraz.

## **Damage, symptoms and occurrence**

Grapevines infected with GPGV can either show symptoms or be asymptomatic. Symptoms associated with infection include delayed budburst, leaf distortion and mottling, shortened shoot internodes, increased berry acidity and poor yield. The virus has been associated with economic losses, particularly in the presence of other viruses. The symptoms of GPGV may be confused with early season bud mite damage, cold injury or herbicide damage.

Internationally, GPGV-associated symptoms have been reported in both young and old vineyards (2-50 years) with no relationship between incidence and vine age. Symptoms appear most distinct at the start of the season and are less apparent on late season growth, with infected plants reported to 'recover' after veraison by producing symptomless shoots and leaves. Symptomatic vines cluster and predominantly occur along vineyard rows and sometimes occur across rows which is indicative of spread by slow-moving vectors.

GPGV and associated symptoms are more frequently reported in Pinot Gris, Pinot Noir, Pinot Blanc and Traminer than other wine-grape varieties.

It is difficult to determine the potential impact of GPGV in Australia, with variability reported across and between studies.



Figure 2. Grapevine Pinot Gris Virus symptoms including stunted shoots (left) and leaf mottling and deformation (right) Source: Dr. Pasquale Saldarelli, Senior Scientist/Virologist, Istituto per la Protezione Sostenibile delle Piante, Bari, Italy.

## Spread

GPGV can be spread through the movement and exchange of infected propagation material and the virus and the disease are graft transmitted. The virus is possibly transmitted by grapeleaf bud and blister mites (*Colomerus vitis*). There is no evidence to support the transmission of the virus mechanically on pruning or harvesting equipment.

## Alternative hosts

Common vineyard weeds including Fat Hen (*Chenopodium album* L.) and White Campion (*Silene latifolia* subsp. Alba (Mill.)) are confirmed hosts of GPGV and express symptoms when infected; however, transmission to grapevines has not been confirmed. For more information on the control of vineyard mites and weeds, refer to the reference list below.

## Virus testing

The presence of GPGV can be confirmed with testing. It is recommended that all grapevine propagation materials (e.g. potted vines, rootlings, cuttings and buds for grafting) are virus tested.



## Diagnosics

Virus testing of grapevines is available from AWRI Commercial Services in South Australia or Crop Health Services in Victoria. For field sampling and sample submission instructions, contact either:

### **AWRI Commercial Services**

Level 2 Reception

The Australian Wine Research Institute

Hartley Grove, Cnr Paratoo Road

Urrbrae SA 5064

Ph: 08 8313 7426 or email: [commercialservices@awri.com.au](mailto:commercialservices@awri.com.au)

Web: [https://www.awri.com.au/commercial\\_services/virus-testing/](https://www.awri.com.au/commercial_services/virus-testing/)

### **Crop Health Services**

AgriBio Specimen Reception

Main Loading Dock

5 Ring Road,

La Trobe University,

Bundoora, VIC, 3083

Ph: 03 9032 7323 / 03 9032 7515 or email: [chs.reception@ecodev.vic.gov.au](mailto:chs.reception@ecodev.vic.gov.au)

Web: <http://agriculture.vic.gov.au/agriculture/pests-diseases-and-weeds/diagnostic-services>

## What does a positive test result mean?

- A positive result indicates that GPGV was present in the grapevine that was tested.
- Grapevine viruses, including GPGV, may have an impact on fruit production and vine growth, affecting quality and yield.
- Controlling grapeleaf bud and blister mites may prevent further spread of GPGV.
- Removal of alternative weed hosts (Fat Hen and White Champion), which may act as a reservoir of the virus, may prevent further spread of GPGV within vineyards.
- Removal of an infected grapevine may prevent further spread in vineyards where the virus occurs with low incidence.
- The use of virus-tested grapevine material is recommended for establishing new vineyards and replanting or top-working of older vineyards.



## Acknowledgement

This work was supported by Australia's grapegrowers and winemakers through their investment body Wine Australia, with matching funds from the Australian Government. The AWRI is a member of the Wine Innovation Cluster. Australian Vignerons (AV) is the wine industry signatory to the Emergency Plant Pest Response Deed and provides biosecurity risk mitigation activities and promotes reporting of suspected emergency plant pests (EPPs). Dr Fiona Constable, Senior Plant Virologist, Department of Economic Development, Jobs, Transport and Resources, Victoria is thanked for providing technical assistance with the development of this fact sheet. Vinehealth Australia is thanked for assistance with reviewing this fact sheet.



## References and further reading

Targeting sprays for vineyard pests and diseases: [https://www.awri.com.au/wp-content/uploads/spray\\_targeting.pdf](https://www.awri.com.au/wp-content/uploads/spray_targeting.pdf)

Grapevine pests and their management:  
[http://www.dpi.nsw.gov.au/\\_data/assets/pdf\\_file/0010/110998/Grapevine-pests-and-their-management.pdf](http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0010/110998/Grapevine-pests-and-their-management.pdf)

Grapevine management guide 2016-17:  
[http://www.dpi.nsw.gov.au/\\_data/assets/pdf\\_file/0017/302840/grapevine-management-guide-201617.pdf](http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0017/302840/grapevine-management-guide-201617.pdf)

Bertazzon, N., Filippin, L., Forte, V., Angelini, E. 2016. Grapevine Pinot Gris virus seems to have recently been introduced to vineyards in Veneto, Italy. *Arch. Virol.* 161: 711-714.

Bertazzon, N., Forte, V., Filippin, L., Causin, R., Maixner, M., Angelini, E. 2016. Association between genetic variability and titre of Grapevine Pinot gris virus with disease symptoms. *Plant Path.* doi:10.1111/ppa.12639.

Giampetruzzi, A., Roumi, V., Roberto, R., Malossini, U., Yoshikawa, N., La Notte, P., Terlizzi, F., Credi, R., Saldarelli, P. 2012. A new grapevine virus discovered by deep sequencing of virus- and viroid-derived small RNAs in cv Pinot gris. *Virus Res.* 163:262-268.

Gualandri, V., Asquini, E., Bianchedi, P., Covelli, L., Brilli, M., Malossini, U., Bragagna, P., Saldarelli, P., Si-Ammour, A. 2016. Identification of herbaceous hosts of the *Grapevine Pinot Gris Virus* (GPGV). *Eur. J. Plant Path.* DOI 10.1007/s10658-016-0989-4.



The Australian Wine  
Research Institute

# Fact Sheet

VITICULTURE

---

Martelli, G. P. 2014. Directory of virus and virus-like diseases of the grapevine and their agents. *J. Plant Path.* 96(1S):110-111.

Mavrič Pleško, I., Viršček Marn, M., Seljak, G., Žežlina, I. 2014. First Report of Grapevine Pinot gris virus Infecting Grapevine in Slovenia. *Plant Dis.* 2014 98(7): 1014-1014

Saldarelli, P., Giampetruzzi, M., Morelli, M., Malossini, U., Pirolo, C., Bianchedi, P., Gualandri, V. 2015. Genetic Variability of *Grapevine Pinot gris virus* and Its association with Grapevine Leaf Mottling and Deformation. *Phytopath.* 105(4): 555-563.

## Contact

For further information, please contact the AWRI helpdesk

**Phone** 08 8313 6600 **Fax** 08 8313 6601 **Email** [helpdesk@awri.com.au](mailto:helpdesk@awri.com.au) **Website** [www.awri.com.au](http://www.awri.com.au)

**Address** Wine Innovation Central Building, Corner of Hartley Grove & Paratoo Rd, Urrbrae (Adelaide), SA 5064