Grapevine syrah virus 1

- Virus/pathogen name, including accepted acronyms and synonyms

  Grapevine syrah virus 1 (GSV1) is an RNA virus of the *Tymoviridae* family, *Marafivirus* genus.

  First identified in 2009 in grapevine in California (Al Rwahnih et al., 2009), GSV1 has also been known as Grapevine virus Q (GVQ) with an almost simultaneous study identifying this virus in both grape and blackberry (Sabanadzovic et al., 2009).

  Along with GVQ, Grapevine syrah virus 1 has also been abbreviated to GSyV-1, GSV-1 and GSYV10. The ICTV accepted name and acronym is Grapevine syrah virus 1 (GSV1).

- Host range, including resistance or tolerance within the crop hosts, alternate hosts

  GVS1 has been found in a number of *Vitis* species including; multiple wine cultivars of *vitis vinifera*, muscadine grape *vitis rotundifolia* and *vitis aestivalis*. GVS1 was first found infecting a native blackberry in 2009 in a mixed infection with BVS, which is also a marafivirus (Sabanadzovic and Ghanem-Sabanadzovic, 2009). Additional surveys found GVS1 in both wild and cultivated blackberry (Khadgi, 2015)

- Symptoms on crop host including varietal differences with images of symptoms when available

  GSV1 was first identified from grapevine with Grapevine decline symptoms, which include cracking and pitting of woody tissue, swelling of the graft union, stem necrosis, as well as leaf scorching and reddening, however, a number of other viruses were also identified in these plants (Al Rwahnih et al., 2009). Other studies identified GSV1 positive grapevines which had no obvious symptoms, or the virus was not clearly associated with these specific symptoms (Caglayan et al., 2017; Cho et al., 2019; Giampetruzzi et al., 2012; Sabanadzovic et al., 2009).

  Blackberry plants infected with GSV1 showed blackberry yellow vein disease (BYVD) symptoms, but not all BYVD plants contained GVS1(Khadgi, 2015), and GVS1 has also been found in a mixed infection with BVS (Sabanadzovic et al., 2009).
  Therefore it is currently unknown whether GSV1 has a role in symptom development of either Grapevine decline or BYVD.

- Geographic distribution:

GSV1 in *Vitis sps* has been found in many countries around the world, including Europe (Spain, Italy, Turkey, Hungary, Slovakia and the Czech Republic) (Caglayan et al., 2017; Czotter et al., 2015; Giampetruzzi et al., 2012; Glasa et al., 2015; Ruiz-García et al., 2017)), Asia (China, Korea (Ahmed et al., 2017; Cho et al., 2019)), South Africa (Oosthuizen et al., 2016), and South America (Chile) (Engel et al., 2010). Two additional countries, France and Brazil, have sequence information available. Within the USA, GSV1 has been found in *vitis sps* in California and Washington State (Al Rwahnih et al., 2009; Mekuria and Naidu, 2010).

GSV1 in Blackberry has only been reported in the USA, in Arkansas, North and South Carolina, as well as the original blackberry sample from the Great Smoky Mountain National Park. GSV1 has been detected in low numbers in blackberry (Khadgi, 2015; Sabanadzovic and Ghanem-Sabanadzovic, 2009). AIt is likely that the countries with GSV1 infection in grape, may also have GSV1-infected blackberry.

- Means of spread:
  Vector transmission studies have not been carried out for GSV1. However, GSV1 has been detected in *Erythroneura variabilis* leafhoppers (Al Rwahnih et al., 2009) whereas other marafivirus species are transmitted by leafhoppers. Yet the vector of the virus has not been verified.

- Recognized diagnostic tests with cited references:

  RT-PCR with primers designed to a region of the methyltransferase (Al Rwahnih et al., 2009). Some studies also use primers designed to the CP region (Glasa et al., 2015) whereas others utilize both sets of primers.

- Sampling recommendations for each pathogen including timing and tissue to be sampled
  Spring to early summer (May-June) is the ideal time for sampling. Ideally, the samples should be taken from young but fully expanded leaves. Sampling from different sites of the same plant increases chances of detection since BSV1 may not be evenly distributed within plants.

- Management strategies for the pathogen and the vector(s) of the pathogen
  Given the lack of knowledge on the epidemiology of the virus the use of certified virus-tested planting material is highly recommended as the virus may be distributed in infected planting material and be asymptomatic, especially in blackberry.

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