Raspberry Yellow Net Virus

a. Virus/pathogen name, including accepted acronyms and synonyms

Rubus yellow net virus, RYNV- Genus *Badnavirus*, Family *Caulimoviridae*, Order *Ortervirales*

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

Rubus yellow net virus has a narrow natural host range, restricted to *Rubus spp.* It infects red raspberry cultivars and probably all blackberry and hybrid berry cultivars (Stace-Smith and Jones, 1987).

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

RYNV can exist as infectious particles (episomal) that cause active infection or it may be incorporated in the host genome (integrated) and remain latent (Diaz-Lara et al., 2016, Ho et al., 2024). Virus symptoms differ between genotypes. In *R. occidentalis* (black raspeberry) initial symptoms include net-like chlorosis on leaves close to the seedling tip. As disease progresses symptoms become unilateral. Some red raspberry (*Rubus idaeus*) genotypes develop chlorosis along the veins with some leaves being slightly cupped downward (Stace-Smith and Jones, 1987), whereas other genotypes remain symptomless (Stace-Smith, 1955). RYNV in mixed infections with black raspberry necrosis virus and raspberry leaf mottle virus causes raspberry mosaic disease (RMD), a virus disease complex that causes serious decline in plant vigor and productivity (Stace-Smith and Jones, 1987; McGavin and MacFarlane, 2010).

d. Geographic distribution:

RYNV is common in *Rubus* crops throughout the Europe and North America (Stace-Smith and Jones, 1987; Kalischuk et al., 2008; Diaz-Lara et al., 2015).

e. Means of spread:

In North America, RYNV spreads rapidly in areas with high populations of the large raspberry aphid *Amphorophora agathonica*, whereas in Europe the major vector is *Amphorophora idaei.* The virus is probably transmitted in a semi-persistent manner (Stace-Smith and Jones, 1987) and Jones et al., (2002) show that their data is

compatible with assumed semi-persistent transmission, but further studies should be taken to explore in more detail the interaction between RYNV and its vector.

f. Recognized diagnostic tests with cited references:

It is possible to detect RYNV by polymerase chain reaction (PCR) (Diaz-Lara et al., 2015, Ho et al., 2024). However as the virus can be integrated in the host genome, PCR product could give positive results even when the virus is inactive (integrated). For this reason reverse transcription polymerase chain reaction (RT-PCR), rolling circle amplification (RCA) or Southern blotting (Diaz-Lara et al., 2016) should be used to differentiate the between integrated and episomal forms of the virus.

g. Sampling recommendations for each pathogen including timing and tissue to be sampled

Samples should probably be taken from leaves that are symptomatic and sampling from different sites of the same plant increases chances of detection.

h. Management strategies for the pathogen and the vector(s) of the pathogen

Since the virus is spread by aphids, the main management strategy would be controlling their population with application of insecticides. Effective control is also obtained by planting cultivars that are either immune or resistant to the vector (Stace-Smith and Jones, 1987).

i. References

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