Raspberry Vein Chlorosis Virus

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

Raspberry vein chlorosis virus (RVCV)
Synonym: Raspberry chlorotic net virus, Raspberry vein chlorosis mosaic
Unclassified member of Genus *Cytorhabdovirus*, Family *Rhabdoviridae*.

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

The main host of RVCV is red raspberry, *Rubus idaeus*. Some red raspberry cultivars (Cuthbert, Latham and Viking), *Rubus occidentalis* (black raspberry) and *R. henryi* appear to be immune to the vein clearing agent, although this was determined before the RVCV discovery (Cadman, 1952; Stace-Smith, 1961).

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

Symptoms include chlorosis of the minor veins, forming a fine yellow net pattern (Jones, et al., 1987). Sometimes there is a distortion of the leaf blade as the leaf grows (McGavin et al., 2010). In some cultivars chlorosis is uniform throughout, whereas in others it is patchy (Jones et al., 1987). The virus can cause a significant reduction in fruit yield, thinning of canes and failure of fruit initiation (Daubeny et al., 1970; Jones, 1980). RVCV is speculated to cause the homonymous disease. Cadman (1952) show that the disease was caused by a graft-transmissible agent named raspberry vein chlorosis virus with synonyms including vein chlorosis mosaic (Cadman and Harris, 1951) and raspberry chlorotic net disease (Jordović, 1963).

c. Geographic distribution:

Raspberry vein chlorosis disease is spread in *Rubus* species throughout Europe. It has been reported in Scotland (Cadman, 1952), Canada (Stace-Smith, 1961), Serbia (Jordovic, 1963), Russia (USSR) (Kuznetsova and Pomazkov, 1971; Tiits, 1962), New Zealand (Cadman and Stace-Smith, 1970; Jones and Wood, 1979) and United Kingdom (Jones and McGavin, 1998). Yet all those reports where published before the discovery of the virus and it is unknown whether RVCV or other agents are associated with the observed symptoms.

e. Means of spread:

The vein clearing agent is transmitted by the small raspberry aphid *Aphis idaei* and by *Aphis rubicola* in Canada (Jones and Wood, 1979) and experimentally by grafting (Jones et al., 1987)

f. Recognized diagnostic tests with cited references:

In preliminary experiments, RVCV particles were detected in sap from infected raspberry leaf tissue by reverse transcription polymerase chain reaction (RT-PCR) (McGavin et al., 2010) and by graft transmission.

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

Samples should be taken from leaves that are young, symptomatic, fully developed and sampling from different parts of the plant increases chances of detection.

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

Management should be focused on monitoring and controlling the vector, small raspberry aphid *A. idaei*, to reduce the incidence of RVCV. Producers should plant immune raspberry cultivars and consider the production and propagation of virus-free plant material (Jennings and Jones, 1986)

i. References

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