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Data Sheets on Quarantine Pests

Black raspberry latent ilarvirus

IDENTITY

Name: Black raspberry latent ilarvirus
Synonyms: New Logan virus
Tobacco streak ilarvirus, black raspberry latent strain
Taxonomic position: Viruses: Bromoviridae: *Ilarvirus*, subgroup 1
Common names: BRLV (acronym)
Notes on taxonomy and nomenclature: This virus has been considered a distinct virus (Lister & Converse, 1972) or a strain of tobacco streak ilarvirus (TSV) (Jones & Mayo, 1975; Brunt & Stace-Smith, 1976). Many other strains of TSV are known, isolated from different hosts, for example the strawberry necrotic shock strain, which also infects *Rubus* (Frazier, 1966) and is closely related to it serologically (Stenger *et al.*, 1987). Because BRLV is closely related to the much more fully documented TSV, relevant details on TSV are also included in this data sheet.
EPPO computer code: RYBLXX
EPPO A2 list: No. 147
EU Annex designation: II/A1

HOSTS

BRLV infects only *Rubus* spp., particularly *R. occidentalis*, but also *R. idaeus*. Though TSV infects a wide range of crop and weed species probably worldwide, it does not infect *Rubus* in Europe.

GEOGRAPHICAL DISTRIBUTION

EPPO region: Absent, apart from a recent report of a "virus serologically related to TSV" in raspberry in Italy (Poggi-Pollini & Giunchedi, 1987); intercepted in the UK (Scotland) in *Rubus* seed and planting material imported from North America (Jones & Mayo, 1975).
North America: Common in wild and cultivated *Rubus* in Canada (including specifically British Columbia) and USA (including specifically Oregon) (Converse, 1972; Lister & Converse, 1972; Brunt & Stace-Smith, 1976; Fulton, 1985).
Oceania: Australia (Victoria) (Jones & Wood, 1979; Guy *et al*., 1982).
EU: Absent.

BIOLOGY

TSV occurs as many variants that differ serologically and in natural and experimental host range (Fulton, 1985). BRLV infects only *Rubus* spp., but TSV strains may also occur in *Rubus*.

TSV is seed-borne in several natural and experimental hosts, including *Rubus* (Converse & Lister, 1969; Brunt & Stace-Smith, 1976). BRLV is transmitted in pollen to the plant pollinated (Converse & Lister, 1969) and circumstantial evidence suggests this mode of spread also occurs with *Rubus* strains of TSV (Converse, 1979). A non-flower

associated means of transmission is postulated for some spread in *Rubus* (Converse, 1979; 1986). TSV (and presumably BRLV) is readily transmitted by mechanical inoculation of sap to several herbaceous species, provided an antioxidant is included in the extraction medium (Fulton, 1985).

DETECTION AND IDENTIFICATION

Symptoms
Infected *Rubus* plants are usually symptomless, as are plants grown from infected seed.

Morphology
TSV (and presumably BRLV) has quasi-isometric particles with properties typical of ilarviruses (Fulton, 1985).

Detection and inspection methods
Detection is best done by mechanical inoculation of *Rubus* sap to herbaceous test plants. BRLV is often unevenly distributed in plants (Converse, 1978) so that samples from several positions on the plant should be tested. Sap must be extracted in pH 8-9 buffer that contains an antioxidant because TSV particles are very labile (Fulton, 1985). Definitive diagnosis can only be made by testing sap from infected herbaceous plants against a suitable antiserum. As a wide range of serological variants of TSV may occur in *Rubus* as well as BRLV, serological tests should include antisera to several strains (Jones & Mayo, 1975; Fulton, 1985). Inspection and test methods are also presented in OEPP/EPPO (1991).

MEANS OF MOVEMENT AND DISPERSAL

Although it is supposed (see Biology) that non-flower-associated means of transmission may exist for BRLV or TSV strains in *Rubus*, these viruses are in practice mainly dispersed by human movement of infected seeds or plants, or by pollen. Transmission by pollen from imported *Rubus* to local plants, or propagation of imported *Rubus* would be the practical means of establishment in *Rubus* in the EPPO region.

PEST SIGNIFICANCE

Economic impact
Few tests have been made to determine the effects of BRLV on growth and yield of *Rubus*. Infected plants are usually symptomless but a decrease in vigour and cane number occurred in infected *R. ursinus* (Converse, 1978).

Control
The mode of transmission of these viruses makes their spread in crops difficult to control except by growing plants immune or resistant to infection. Healthy planting material should be used; EPPO developed (OEPP/EPPO, 1994) a virus-free certification scheme for *Rubus*.

Phytosanitary risk
The EPPO A2 quarantine list includes three pollen-borne viruses of *Rubus* (OEPP/EPPO, 1986). Apple mosaic ilarvirus and cherry leafroll nepovirus (EPPO/CABI, 1996a, b) are widespread in Europe, but not or hardly found in *Rubus* there. So European *Rubus* can most probably become infected by these viruses only by pollen transmission from infected *Rubus* from non-EPPO regions. BRLV, the third virus concerned, in fact does not occur in the EPPO region at all, so could simply be considered as an A1 quarantine pest. However, the situation has been complicated by the fact that certain strains of the closely related TSV, which does occur in Europe, are found in *Rubus* in North America. For that reason,

the non-European *Rubus*-infecting strains of TSV have been associated with BRLV for the purposes of the risk analysis. The quarantine status of BRLV and TSV needs to be reviewed.

It may be noted that BRLV is in itself an insignificant pest of *Rubus.* The decision to consider it as a quarantine pest was partly based on the possibility of synergistic effects in mixed infections but mainly on the wish of certain EPPO countries to produce and maintain virus-free *Rubus*. This could probably be achieved as successfully by using normal certification, following for example an adaptation of the scheme proposed by OEPP/EPPO (1994).

PHYTOSANITARY MEASURES

Plants of *Rubus* from countries where BRLV occurs should come from a reliable certification scheme, in which particular attention has been paid to preventing pollen-transmitted reinfection. Standard methods for eliminating viruses can be used for these viruses in nuclear stock of *Rubus*.

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