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Data Sheets on Quarantine Pests

Plum American line pattern ilarvirus

IDENTITY

Name: Plum American line pattern ilarvirus
Synonyms: American plum line pattern virus
Plum line pattern virus (American)
Taxonomic position: Viruses: Bromoviridae: *Ilarvirus*, subgroup 5
Common names: APLPV (acronym)
Plum line pattern, banded chlorosis of oriental flowering cherry (English)
Notes on taxonomy and nomenclature: APLPV is serologically distinct from other viruses which cause line pattern symptoms. In Europe, line pattern in plum is caused by strains of prunus necrotic ringspot ilarvirus or apple mosaic ilarvirus, which are not serologically related to APLPV (Seneviratne & Posnette, 1970). In the western USA also, plum line pattern is caused by a strain of prunus necrotic ringspot ilarvirus. In fact, line pattern symptoms have been reported from many other areas of the world, such as New Zealand and India, but there are no indications by which virus they are caused. Such symptoms as apricot line pattern or peach line pattern could conceivably be caused by any of these viruses.

The virus is a species of subgroup 5 of the ilarvirus genus (Rybicki, 1995), although it has no serological relationship with prune dwarf ilarvirus, prunus necrotic ringspot ilarvirus or apple mosaic ilarvirus (Fulton, 1984).
EPPO computer code: PLLPXX
EPPO A1 list: No. 28
EU Annex designation: I/A1 - as Plum line pattern virus

HOSTS

The main hosts are plums and other *Prunus* spp. such as peaches and *P. serrulata*. Isolates of APLPV have been transmitted mechanically to 85 species in eight families. Furthermore, the purified virus can be transmitted to various other Rosaceae (Németh, 1986). In practice, for the EPPO region, *Prunus* spp. are the potential hosts. For more information on host range, see Zeller & Milbraith (1942), Paulsen & Fulton (1968), Seneviratne & Posnette (1970), Kirkpatrick & Fulton (1976), Németh (1986).

GEOGRAPHICAL DISTRIBUTION

EPPO region: Absent.
North America: Canada (Nova Scotia, Ontario), Mexico (unconfirmed), USA (Kentucky, Michigan, Ohio, Wisconsin); records in California refer to similar symptoms caused by PNRSV.
EU: Absent.

BIOLOGY

Certain ilarviruses are known to be transmitted by pollen (Digiaro *et al.*, 1991), but so far no vector has been demonstrated for APLPV. The virus is easily transmissible in tree hosts by bark patch grafting, budding and mechanical means, but is not seed-borne. *Cuscuta campestris* transmitted the virus from *Nicotiana megalosiphon* to *Petunia*, but other trials with different *Cuscuta* spp. and other plants have failed. The virus is unstable in crude sap and has a thermal inactivation point in diluted sap of 66°C for 10 min. For more information, see Seneviratne & Posnette (1970).

DETECTION AND IDENTIFICATION

Symptoms

Symptoms are invariably confined to leaves emerging in the spring, when the daily mean temperatures are below 15°C.

On *Prunus salicina*, there is a regular sequence of pattern types, commencing with the brilliant, green-yellow patterns of the oak-leaf type, then a mixture of oak-leaf and yellow veinbanding and finally by overall yellow veinbanding. In early summer, the yellow of these patterns fades to a creamy-white, and new leaves emerging after June are symptomless.

On plum cultivars Italian Prune, Reine Claude and First, the patterns are of a very faint oak-leaf type, and may even be absent altogether in the former. On cvs German Prune and Grand Duke, fine, irregular, yellowish lines predominate.

On most cultivars of peach, in spring and early summer, there are fine irregular, pale-green, wavy bands on each side of the main veins of the leaves. These either form a symmetrical pattern or are broken and turned back to form figures of various shapes. Some leaves develop a network of fine lines, or a golden net pattern, fine confluent rings, veinbanding, or an oak-leaf pattern. Symptoms usually disappear in summer.

On *P. serrulata*, whitish, yellowish or pinkish discoloured areas of various forms occur, sometimes large rings but more often oak-leaf patterns. Leaf borders are faintly chlorotic to pronounced golden or white (Smith, 1972).

Morphology

Particles are quasi-isometric, and of four different sizes (26, 28, 31 and 33 nm) corresponding to different sedimentation coefficients (Fulton, 1984).

Detection and inspection methods

Leaf tissue from trees suspected to be infected can be mechanically transmitted to the herbaceous indicators *Nicotiana megalosiphon* and *Vigna cylindrica*, both of which develop chlorotic or necrotic local lesions and ringspots followed by a systemic chlorotic mottle with necrosis on new growth. Such symptoms are not sufficiently specific for positive identification and the identity of the virus must be confirmed by a serological test. The virus can be effectively detected by ELISA or by an agar gel double diffusion test (Németh, 1986). For more information, see Seneviratne & Posnette (1970), Smith (1972), Kirkpatrick & Fulton (1976), Németh (1986).

MEANS OF MOVEMENT AND DISPERSAL

The means of natural spread is not exactly known, but if this is limited to transmission by infected pollen grains the risk of natural spread over long distances should be very small. The virus is not seed-borne. International spread is most probable by means of infected planting material.

PEST SIGNIFICANCE

Economic impact

Although of negligible importance on its own, APLPV appears to act synergistically with other viruses such as prune dwarf ilarvirus.

Control

It is doubtful whether roguing of trees should be recommended; use of disease-free planting material is suggested.

Phytosanitary risk

APLPV is considered to be an EPPO A1 quarantine pest (OEPP/EPPO, 1978), but is not of quarantine significance for any other regional plant protection organization. The lack of research on this virus during recent years may indicate that its importance has declined. It may be adequately covered by normal virus-free certification (OEPP/EPPO, 1991/1992).

PHYTOSANITARY MEASURES

According to the EPPO specific quarantine requirements (OEPP/EPPO, 1990), imported propagating material of host plants should have been subject to a visual growing-season inspection. If such material is imported from countries where the virus occurs, it should originate from a certification scheme giving appropriate guarantees. EPPO recommends such a certification scheme for use within the EPPO region (OEPP/EPPO, 1991/1992), but it could be extended to other regions after appropriate modifications.

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