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Data Sheets on Quarantine Pests

Apricot chlorotic leafroll phytoplasma

IDENTITY

Name: Apricot chlorotic leafroll phytoplasma
Synonyms: European stone fruit yellows phytoplasma
Apricot chlorotic leaf roll virus
Peach chlorotic leaf roll virus
Taxonomic position: Bacteria: Tenericutes: Mollicutes: Phytoplasmas
Common names: Apricot chlorotic leafroll, apricot dieback (English)
Enroulement chlorotique de l'abricotier (French)
Chlorotisches Blattrollen (German)
Desarreglos vegetativos o enrollamiento clorótico del albaricoquero (Spanish)
Accartocciamento clorotico dell'albicocco (Italian)
Notes on taxonomy and nomenclature: A possible relationship with apple proliferation phytoplasma (EPPO/CABI, 1996) remains to be confirmed. Recently, Lorenz *et al.* (1994) and Seemüller & Foster (1995) have concluded that several diseases of *Prunus* in Europe, described under different names (apricot chlorotic leafroll, plum leptonecrosis, plum decline, cherry molière disease) are caused by one and the same phytoplasma, for which the name "European stone fruit yellows phytoplasma" is proposed. This data sheet has not yet been extended to cover all these diseases, since the quarantine pest status of European stone fruit yellows phytoplasma as a whole has not yet been assessed.
EPPO computer code: ABCLRX
EPPO A2 list: No. 146
EU Annex designation: I/A2

HOSTS

The main hosts are apricots, peaches and *Prunus salicina*. Plums can be symptomless carriers of the disease (Németh, 1986). Most related *Prunus* spp. can be experimentally infected and some show severe symptoms.

Some weeds, such as *Convolvulus arvensis* and *Cynodon dactylon*, can be naturally infected (Németh, 1986).

GEOGRAPHICAL DISTRIBUTION

Apart from an isolated unconfirmed report in South Africa, the disease is apparently present only in Europe (Morvan, 1977).
EPPO region: France (throughout the areas of apricot cultivation), Germany, Greece (Rumbos & Bosabalidis, 1985), Italy (especially in Emilia-Romagna; Giunchedi *et al*., 1978; Ragozzino *et al*., 1983), Romania (Ploaie, 1980), Spain (especially in Valencia province), Switzerland, Yugoslavia.
Africa: South Africa (Németh, 1986; unconfirmed).

EU: Present.

BIOLOGY

The disease, having been graft-transmitted, was attributed to a virus. However, the yellows-type symptoms, the detection of mycoplasma-like particles in sieve tubes, and the partial effectiveness of tetracycline treatments have shown that the agent must be a phytoplasma (Morvan *et al*., 1973). The pathogen has not yet been cultured on a synthetic medium. Transmission by an insect vector certainly occurs and is the major means of spread. *Fieberiella florii*, a leafhopper, has been identified as a potential vector of the disease.

DETECTION AND IDENTIFICATION

Symptoms

Disease symptoms can be detected throughout the year, since one effect is stimulation of new growth during winter dormancy. This, however, is blocked by frost. The best times for observing symptoms are before flowering and at the end of the summer. In spring, infected trees bear leaves before the flower buds open. If winter temperatures fall below -5°C, infected trees show browning of the middle layer of the bark, darker and thicker according to the severity of the winter. The cambium may be affected, but in spring the outside of the bark appears normal, remaining green if the suber layer is sufficiently thin. One to two months later, the external part of the bark dries out. Leafroll symptoms develop through the summer, becoming most clearly visible at the end of September (except in cases of heavy rust attack). The lamina rolls up along lines running from the petiole to the tip, possibly touching the leaf margin at one or two points on the way, giving either a cone or a polygonal outline. Irregular interveinal chlorosis is also seen. Finally, there is a proliferation of rudimentary buds at the end of short shoots and a tendency for buds to open on old wood.

The symptoms on *Prunus salicina* are similar but less typical. Leaves are smaller and reddish, and show cylindrical rather than conical rolling.

Morphology

Németh (1986) described the morphological features of apricot chlorotic leafroll phytoplasmas as pleomorphic bodies. However, bacilliform particles can also be found. Rod-shaped or spherical intravacuolar bodies can be found in young and lightly infested phloem cells. Bodies in old and heavily infested cells are compressed and degenerated (Németh, 1986).

Detection and inspection methods

Positive identification requires a graft-transmission test: a bud from the apricot tree under test (or better from its rootstock if it is on plum) is double-budded in June with a healthy apricot bud onto a plum rootstock. A rapid test which may be tried is the use of DAPI reagent (4,6-diamidino-2-phenylindole) to detect fluorescence of phytoplasmas in the sieve-tubes of the leaf veins. An EPPO quarantine procedure on the detection of fruit tree phytoplasmas is in preparation.

MEANS OF MOVEMENT AND DISPERSAL

Infected planting material (young plants, budwood, and especially vegetatively propagated rootstocks) is the main potential means of introduction over long distances into uninfested areas. However, the risk for such an area remains relatively limited, since the main actual mode of transmission is by vector.

PEST SIGNIFICANCE

Economic impact

Apricot trees are killed 12-24 months after first appearance of symptoms. This period may be reduced to weeks if the rootstock is peach. Spontaneous recovery is rare for apricot, but does occur more often with *Prunus salicina*.

In France, this pathogen is probably responsible for 60-70% of cases of apricot decline. Serious problems begin to arise when trees come into bearing, after around 5 years; 5% of trees may then be killed every year. In other countries where the pest occurs, *P. salicina* seems to be more important as a host.

Control

Budwood should be obtained from healthy mother plants, preferably grafted on peach rootstocks.

Phytosanitary risk

Apricot chlorotic leafroll phytoplasma is considered to be an EPPO A2 quarantine pest (OEPP/EPPO, 1986). The disease certainly has the potential to cause significant damage in *Prunus* cultivation if introduced to other areas in the Euro-Mediterranean region.

PHYTOSANITARY MEASURES

Plants of *Prunus* for planting should come from a field found free from apricot chlorotic leafroll phytoplasma during the last growing season. From countries where the disease occurs, the plants must additionally be no further than the second generation from mother plants tested by an EPPO-approved method, and the immediate vicinity of the field must also be found free from the pathogen (OEPP/EPPO, 1990).

The EPPO certification scheme for fruit trees (OEPP/EPPO, 1991/1992) covers apricot chlorotic leafroll phytoplasma and should give a high security for phytoplasma-free planting material.

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