

## Data Sheets on Quarantine Pests

**Strawberry witches' broom phytoplasma****IDENTITY**

**Name:** Strawberry witches' broom phytoplasma

**Taxonomic position:** Bacteria: Tenericutes: Mollicutes: Phytoplasmas

**Common names:** Witches' broom of strawberry (English)

**EPPO computer code:** SYWBXX

**EPPO A1 list:** No. 130

**EU Annex designation:** I/A1

**HOSTS**

In USA, the disease has been found only on strawberries. Within the EPPO region, strawberries are widely cultivated and propagated.

**GEOGRAPHICAL DISTRIBUTION**

**EPPO region:** Absent.

**Asia:** Japan (Honshu).

**North America:** Canada (Alberta, British Columbia, New Brunswick, Nova Scotia, Northwest Territory), USA (California, Oregon, Washington and Great Lakes region).

**EU:** Absent.

**BIOLOGY**

Formerly thought to be a virus, the agent of strawberry witches' broom disease is now considered to be a phytoplasma, on the basis of its sensitivity to oxytetracycline and by analogy with other pathogens causing witches' brooms (Huhtanen & Converse, 1971). The pathogen is known to be graft-transmissible. Reports of aphid transmission have not been confirmed and, so far, leafhopper vectors (*Macrostelus orientalis*, *M. fascifrons*) have been reported in only one experiment carried out in Japan (Shiomi & Sugiura, 1983). Little is known of how the disease spreads in the field.

For additional information, see Zeller (1927), Boone (1970), Smith (1972).

**DETECTION AND IDENTIFICATION****Symptoms**

Plants are dwarfed, bushy in appearance, with multibranched crowns and erect spindly petioles supporting small leaves. Fruit is rarely formed.

**Morphology**

By electron microscopy, structures resembling phytoplasmas can be seen in the phloem of infected petioles of strawberry.

### **Detection and inspection methods**

Infection can be confirmed by graft transmission to indicator clones of *Fragaria vesca* or *F. virginiana* (Frazier, 1974).

### **MEANS OF MOVEMENT AND DISPERSAL**

The modes of natural transmission of the disease are not well known. Infected propagating materials, including tissue cultures, are liable to carry the disease in international trade.

### **PEST SIGNIFICANCE**

#### **Economic impact and control**

Diseased plants generally bear no fruit. However, they are usually conspicuous and readily removable from commercial plantings, so that the percentage of infected plants can be kept low. The present economic importance of the disease in North America is therefore relatively minor.

#### **Phytosanitary risk**

Strawberry witches' broom phytoplasma is listed by EPPO (OEPP/EPPO, 1984) as an A1 quarantine pest. It is not of quarantine significance to any other regional plant protection organization. The potential importance in the EPPO region is probably no greater than in North America, but it is difficult to make a full assessment of risk because nothing is known of the susceptibility of European strawberry cultivars or the potential of European insects to act as vectors. In any case, the phytoplasma can fairly simply be excluded from the region by measures applied to prevent the introduction of other strawberry pathogens (OEPP/EPPO, 1990).

### **PHYTOSANITARY MEASURES**

In transit, inspections may detect plants with symptoms, but it is preferable to rely on field inspections during the previous growing season and this is the recommendation of EPPO for plants for planting of strawberry from countries where the phytoplasma occurs (OEPP/EPPO, 1990). This can readily be assured for material originating from a formal crop certification scheme, as required for other strawberry pathogens. An EPPO certification scheme for strawberry has been published (OEPP/EPPO, 1994).

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