

Strategy to control *Plum Pox Virus* damage

Problem

Plum pox virus disease (*Plum pox virus*, PPV), also called sharka, is stone fruit species' most destructive viral disease. Fruits from infected trees are noticeably worse tasting and less sugary and, therefore, unsuitable for consumption. Damaged fruits fall prematurely to the ground, which makes the yields lower.

Solution

Trees infected with PPV cannot be treated; therefore, applying preventive measures is the only effective technique to control the damage. Therefore, planting virus-free certified material is an essential aspect. Growing resistant varieties help to avoid the spread of PPV infection in the orchard.

Applicability box

Theme

Crop production, Stone fruits

Keywords

Virus-free certified planting material, Fruit quality, Flavour

Context

Cherry production areas, Temperate regions

Application time

Orchard establishment

Period of impact

Vegetative period, orchard lifespan

Benefits

Growing PPV-resistant varieties combined with PPV-resistant rootstocks improve fruit-growing economics and financial return.

Practical recommendations

- **HOST PLANTS:** All stone fruit species, PPV mainly infects plum trees. Apricots, peaches, nectarines, and sweet and sour cherries can be infected by different strains of the virus
- **SYMPTOMS** of the Plum Pox Virus disease:
 - On leaves: Ring-shaped chlorotic spots and marks, mostly diffused, bright green (see pictures 1 and 3)
 - On fruits: Deformations, ring-, line- or pox-like depressions or shrivelling fruit (see picture 2)



Picture 1: Chlorotic ring-shaped spots on plum leaves. Photo: Radek Vávra, VSUO, CZ.



Picture 2: Deformation on fruits. Photo: Gabriela Schlesingerová, UKZUZ, CZ.



Picture 3: Symptoms of PPV infection on apricot leaves. Photo: Radek Vávra, VSUO, CZ.

- **DAMAGE:**
 - Fruits have lower sugar content, worse appearance, and are unsuitable for fresh sale consumption
 - Fruits fall prematurely to the ground, and fruit quality and yield is lower

- Infected trees have lower assimilation due to chlorotic spots, and tree vigour is lower

DISEASE TRANSMISSION:

- PPV damage occurs mainly after planting of infected plant material, and the virus is spread by aphids in orchards
- Vegetative, especially by vegetative reproduction (scions, grafts)
- PPV can also be spread during tree pruning through non-disinfected pruning devices
- PROTECTION: Treatment against PPV does not exist yet, so the application of preventive measures is the only effective way of disease control. Direct control only reduces the next virus spreading
 - PREVENTIVE MEASURES: Use certified virus-free plant material, and grow resistant varieties grafted onto resistant rootstocks to fully protect trees against PPV infection
 - DIRECT MEASURES: Destroy all infested trees and control aphids (the vector of PPV transmission) for the purpose of decreasing the additional spreading of PPV within the orchard
- PPV-resistant plum varieties: Jojo, Jofela, Joganta, Jolina, and Moni
- PPV-resistant plum rootstocks: Docera 6, and Dospina 235
- Growing resistant varieties on resistant rootstocks avoid PPV infections in plum orchards

Further information

Further reading

- Hartmann, W., Neumüller, M. 2013. The next generation of European plum cultivars resistant to Plum pox virus. Acta Hort., 985, 149–154
- Neumüller, M, Muhlberger, L, Siegler, H. 2013. New rootstocks with resistance to plum pox virus for Prunus domestica and other stone fruit species: The Docera and Dospina rootstock series. Acta Hort. 985, 155-165
Hartmann, Walter. "Sharka-Resistant Plum Hybrids and Cultivars from the Plum Breeding Programme at Hohenheim" Proceedings of the Latvian Academy of Sciences. Section B. Natural, Exact, and Applied Sciences., vol.73, no.3, 2019, pp.226-231.

Weblinks

- Plum Pox Virus, PennState University Extension
- Check the Organic Farm Knowledge platform for more practical recommendations.

About this practice abstract

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