Volume 2, Issue 11, November - 2024
ISSN (E): 2938-3781

Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8

GEOGRAPHICAL DISTRIBUTION AND SYMPTOMOLOGY OF PLUM POISONING VIRUS

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Abstract
Currently, the fruit and vegetable industry is developing rapidly among the countries of the world. This is certainly beneficial for the increase in imports and exports and the development of countries. At the same time, pathogenic organisms such as AChV are also spreading rapidly from one region to another. This is a natural phenomenon that leads to the death of many pome fruit plants. This article discusses the countries, plants and symptomatology where Plum pox virus can occur.

Keywords. Pathogenic organisms, Hungarian, insects, Potyvirus, Prunus genus, vegetative propagation, strain.

Introduction

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Abstract:
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Keywords: Pathogenic organisms, Hungarian, insects, Potyvirus, Prunus genus, vegetative propagation, strain.

Introduction

Plum pox virus (PVP), which causes plum pox, belongs to the genus Potyvirus (family Potyviridae). The natural hosts of this virus are pome fruit plants and ornamental trees. In plants with susceptible genotypes, the disease is characterized by the appearance of spots on leaves and fruits and fruit drop [1].

Geographic distribution. Although the incidence varies in different countries, the virus covers a large part of the areas where plants of the genus Prunus are grown (except Australia, New Zealand, South Africa and the USA). PVP is constantly transmitted by more than 20 species of

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aphids, by grafting infected plants and by vegetative propagation. However, seed transmission has not been scientifically proven so far. To date, about 10 strains of OCHV (M, D, Rec, EA, T, W, C, CR, CV and An) have been identified by biological, serological and molecular tests [2]. Although there are many sensitive and specific identification tools for OCHV, its rapid variability, uneven distribution among infected hosts and low titer at times other than the active growth period of the plant significantly reduce the ability to detect the virus.

Plum pox virus is the most destructive viral pathogen of pome fruit plants (peach, apricot, plum, Japanese plum). The disease is named after its characteristic symptoms observed on the fruit, i.e., it forms pox-like spots on the fruit and leaves. OCHV, which has been recognized for about a century, has had a devastating impact on the world fruit and vegetable industry and nursery organization, mainly in central and southern European countries. The damage is not only related to the direct loss of fruit yield and quality, but also includes quarantine, prevention, culling and compensation measures. The negative impact of this virus on the global fruit industry since 1970 exceeds 10 billion euros.

In the field, fruit trees infected with ACHV cannot be cured and the disease is often managed by preventive measures. Trees infected with ACHV usually do not grow but do not die either[3]. The disease also manifests itself with clear symptoms that negatively affect fruit yield and quality. Fruit of susceptible varieties is sometimes unsuitable for consumption or processing because of reduced fruit weight and sugar content, poor overall taste, and appearance defects. The most obvious symptom is premature fruit drop, which can reach 80%-100% in the most susceptible varieties. Consequently, traditional susceptible varieties have been replaced in many areas by less susceptible or resistant varieties, which often have poorer taste.

The natural hosts of OCHV are restricted to species of the genus Prunus (family Rosaceae), including cultivated pome fruit plants such as plum (P.domestica), Japanese plum (P. salicina), apricot (P. armeniaca), peach and nectarine (P. persica), almond (P.dulcis), sweet cherry (P. avium), cherry (P. cerasus), and mahaleb cherry (P. mahaleb). Plants can be naturally infected with adapted OCHV isolates. OCHV can infect wild and ornamental species such as Nanking cherry (P. tomentosa), Japanese apricot (P. mume), Canadian plum (P. nigra), American plum (P. americana), dwarf flowering almond (P. glandulosa), and blackthorn (P. spinosa), which may serve as local reservoirs of the virus.

In Prunus trees, symptoms of the disease can be observed on leaves, flowers, fruits or seeds, but they vary depending on the susceptibility of the plant, the virus isolate, the physiological state, the age of the host and environmental conditions (Figure 1). The presence of other viruses on the trees, such as Prunus necrotic ringspot virus (PNRSV), apricot dwarf virus (PDV) or apple chlorotic leaf spot virus (ACLSV), can further increase the severity of symptoms.

In the field, symptoms on plants are often latent late in the season or during the warm period of the growing season. In addition, early infections are often characterized by symptoms occurring on certain parts of the tree branches, and full systemic infection of the tree may take several years. These factors can sometimes complicate the diagnosis of the disease by visual inspection. In addition, the irregular distribution and migration of the virus in trees and the use of methods with low titer sensitivity and inadequate sensitivity outside the active growing season can make it difficult to detect the virus. Typical leaf symptoms in plums usually consist of light green chlorotic rings, spots or patterns. Fruits of susceptible varieties develop pale rings or pits,

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sometimes with brown or reddish necrotic flesh. Fruits of resistant plum varieties do not show any symptoms. Other plant species often show similar symptoms. For example, chlorotic or light green rings and streaks appear on the leaves of infected apricot trees, and light colored rings appear on the fruits, which may be severely deformed. The fruits are marked by the usual colorless rings.

Symptoms of the disease of peach genotypes susceptible to the disease are pronounced enlargement of leaf veins, small chlorotic spots and a violation of the leaf structure. In some varieties, signs of discoloration of the petals are observed. Pale rings or diffuse bands are visible on the skin of the fruits. In general, symptoms in peaches are less visible than in plums and apricots. Almond infection is often asymptomatic or with limited leaf symptoms. Characteristic symptoms in cherries consist of light green patterns on the fruit and rings on the leaves. The fruits may be deformed with slightly chlorotic and necrotic rings and serrated marks. Early fruit drop (up to 100% in the most susceptible varieties) is especially common in plums and apricots.

Conclusion

It is essential that everyone learns about the ASF pathogen and the disease it causes, even those with limited access [4]. Because this pathogen is spreading rapidly around the world and poses a serious threat to fruits that are important for human consumption, it is essential that people have an understanding of this pathogen to prevent this disease.

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