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Scientific papers

Yoshikawa, N., Converse, R. H. (1990): Strawberry pallidosis disease; distinctive dsRNA species associated with latent infections in indicators and in diseased strawberry cultivars. Phytopathology 80: 543-548.

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VIRUS DETECTION OF APPLE STEM PITTING IN DIFFERENT SPECIES OF POME FRUITS

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Summary

Apple stem pitting foveavirus (ASPV) is one of a major pome fruit crop viruses. It infects latently commercially grown apple cultivars, whereas in susceptible apple, pear and quince cultivars, it causes a number of diseases or they can be ascribed to it. Although some hosts may be symptomless, ASPV substantially reduces yields and fruit quality and plant growth causing a concurrent increase in susceptibility to frost and pathogens.

Reliable detection of the virus is a crucial step towards detecting disease presence on certain hosts, as well as in the production of virus-free planting material for forming healthy orchards, which is one of the essential measures in efficient control of diseases induced by ASPV. This paper was, therefore, aimed at detecting Yugoslav ASPV isolates in different pome fruit species, biologically by tests in the field and green house as well as by molecular methods of the analysis of the virus specific double-stranded RNAs (dsRNAs) and multiplying specific fragments of virus genome by RT-PCR.

Tests on woody indicators in the field detected ASPV in 25 out of 30 different pear cultivars tested, in 9 out of 15 apple trees tested and in 8 out of 16 quince trees tested. Under our climatic conditions, indicators of *P. communis* Jules d'Airolles and *Pyronia veitchii* proved to be fully reliable for detecting ASPV from pear, as well as indicators of *M. pumila* cvs Spy 227 and Virginia crab for detecting ASPV from apple. Detection of ASPV from quince on indicators used either for pear or apple was shown to be more difficult and less reliable, for all the

trees tested were infected with ASPV according to the dsRNA analysis, and ASPV was detected only in a half of the trees tested.

Yugoslav ASPV isolates from apple and pear can be mechanically transmitted to herbaceous indicator plants, though with difficulties and rather varying efficiency, in contrast to the isolates from quince, which cannot be mechanically transmitted to herbaceous plants.

ASPV specific dsRNAs were isolated from leaves from all the infected quince field trees collected in July-September, which indicated complete reliability of this method in detecting ASPV from quince in comparasion to the tests on woody indicators, of that host whose results turned out to be unreliable. Specific dsRNAs were easily isolated from herbaceous plants infected with apple and pear isolates and may serve as a confirmation of the successful isolation from woody plants.

The results of successful multiplication of the fragments of virus genome of 291 bp with a set of primers designed by Malinowski et al. (1998) obtained with our isolates derived from different hosts are encouraging with regard to a faster molecular detection of ASPV by RT-PCR. However, due to great genetic variability of ASPV isolates, which is not always related only to the host species, this set of primers need to be tested for the detection of a larger number of isolates so that its complete reliability for a routine ASPV detection could be confirmed.

Since ASPV has a significant biological and economic impact on different pome fruit species, it is necessary to use several types of tests for a reliable confirmation of the presence or the absence of ASPV.

Key words: ASPV, detection, biological tests, dsRNA, RT-PCR

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Naučni rad

PATHOGENIC CHARACTERISTICS OF ISOLATES OF *BIPOLARIS* AND *EXSEROHILUM* SPECIES FROM WEEDS[1]

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The pathogenic characteristics of 10 isolates of *Bipolaris* species and two isolates of *Exserohilum* species, isolated from the leaves of six weed species of the family *Poaceae* (Tab. 1) have been studied. Weeds (*Cynodon dactylon*, *Panicum crus galli*, *Setaria glauca*, *Setaria verticillata*, *Setaria viridis* and *Sorghum halepense*) with expressed symptoms of leaf spots were collected in maize crop at Zemun Polje. Pathogenicity of isolates was tested by artificial inoculation of hosts, sorghum and maize, in the control environmental chamber. Leaf, stalk and ear of maize plants were also inoculated in the field.

Obtained results indicated that all studied isolates of *Bipolaris* and *Exserohilum* species expressed pathogenicity to their hosts which they had been isolated from. Four out of seven tested isolates of *Bipolaris* species were pathogenic to sorghum, whereas nine out of ten studied isolates of this genus were pathogenic to sorghum and maize in the control environmental chamber, on one hand.

On the other hand, in the field, four isolates of *Bipolaris* species showed pathogenicity to maize leaves, five to stalks and eight to ears. Two isolates of *Exserohilum* species revealed pathogenicity to maize leaves and non-pathogenicity to maize ears, but one isolate was pathogenic to maize stalks.

Key words: *Bipolaris* spp., *Exserohilum* spp., weed, maize, sorghum, pathogenicity

INTRODUCTION

Bipolaris and *Exserohilum* species proved to be parasites of monocotyledonous and dicotyledonous, cultivated and non-cultivated plant species. The following species were determined as weed pathogens in the former Yugoslavia: *Bipo-*

[1] This paper is a part of a Master thesis defended under Prof. Dr Momčilo Arsenijević at the Faculty of Agriculture, Novi Sad Universty, on July 8th. Results were also presented at the 4th Yugoslav Congress of Plant Protection, Vrnjačka Banja, Yugoslavia, September 21-26, 1998.

INHERITANCE OF THE WHEAT ACTIVE RESISTANCE TO *PUCCINIA RECONDITA TRITICI*

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Summary

Over many years, under field conditions after artificial inoculation resistance to *Puccinia recondita tritici* of three winter wheat genotypes KM 157/89, Kremna and Delta cv. was estimated. Complete resistant line from Bulgaria was crossed with Yugoslavian incompletely resistant cultivars.

The aim of the study was to create durable resistant genotypes containing both active genes for resistance based on the investigation of parental resemblance, mode of the inheritance, type of the interaction and the number of involved genes. For durability, the identical properties of certain parental genes are of great importance.

According to the segregation in the types and assessments of the resistance after quantitative inoculation of the progenies and parents in the settling tower, it can be concluded that incomplete resistance character was controlled by accumulated interacting genes in different combinations, while complete resistance by three complementary effective genes. One of the genes from KM 157/89 (AABBCC) was also noticed in Delta (aaBBcc) i Kremna (aabbCC) cv. The genes for complete and incomplete resistance in the investigated progenies were not alike. Combination or dosage of the investigated genes for hypersensitivity did not influence the incomplete resistance.

Key words: wheat resistance, *Puccinia recondita tritici*, leaf rust.

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PEROXIDASE ACTIVITY AND ISOENZYMES PROFILES IN MAIZE DWARF MOSAIC POTYVIRUS LEAVES

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Summary

Infection of maize plants with two different viruses: maize dwarf mosaic potyvirus (MDMV) or sugarcane mosaic potyvirus-strain Yu (SCMV-YU), which produced the same type of symptom, resulted in identical changes in peroxidase activity and changes in the profiles of peroxidase isoenzymes.

The peroxidase activity kept changing during infection. An increase in the activity of peroxidase was evident at the early stages of the infection. Very low activity of this enzyme was recorded on the 9th day after inoculation when clear symptoms of virus infection were expressed. The level of peroxidase activity was also dependent on the age of the infected leaves. The change in peroxidase activity was negligible in mature leaves and very pronounced in young fast-growing leaves.

The isoenzyme profiles of peroxidase investigated in this study, suggested that infection with MDMV or SCMV-YU involved in the senescence reaction was produced by the virus infection.

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