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PLANT PATHOGENIC BACTERIA PATHOGENS OF SMALL GRAIN CEREALS

by

M. Arsenijević
Faculty of Agriculture, Novi Sad
Institute for Plant Protection and Evironment, Belgrade

Summary

In this paper the literature review of the symptoms, bacteriological characteristics and hosts range of the pathogens (*Pseudomonas cichorii*, *P. fuscovaginae*, *P.s.* pv. *atrofaciens*, *P.s.* pv. *coronafaciens*, *P.s.* pv. *syringae*, *Xanthomonas campestris* pv. *translucens*, *Erwinia rhapontici* and *Bacilus megaterium* pv. *cerealis*) are given. Besides them the other bacteria as pathogens of cereals are mentioned: *Clavibacter iranicus*, *C. michiganensis* subsp. *tessellarius*, *C. rathayi*, *C. tritici* and *P. avenae*.

THE EFFECTIVENESS OF RESISTANCE GENES DERIVED FROM *AEGILOPS SPP.* TO WHEAT RUSTS

by

S. Stojanović[1], Jovanka Stojanović,[1] Z. Jerković,[3] S. Milijić[2] and R. Jevtić[3]

[1,3] Agriculture Research Institute „Serbia", Belgrade
[1] Center for Small Grains, Kragujevac
[3] Center for agricultural and technological investigation, Zaječar
[2] Institute of Field and Vegetable Crops, Novi Sad

Summary

In this paper resistance of nearly isogenic lines with genes Sr32, Sr33, Lr9, Lr21 and Lr22 derived from *Ae. squarrosa* and *Ae. umbellulata* is presented.

The genes Sr32 and Sr33 showed good effectiveness to different pathotypes of wheat stem rust in seedling stage. But, in adult stage lines with this genes were moderately resistant to very susceptible in Kragujevac and Zaječar. The most effective was gene Lr9. In our population of wheat leaf rust there is no alleles of virulence to this gene. The lines with other two genes (Lr21 and Lr22) were susceptible in Novi Sad and moderately susceptible in Kragujevac.

Studies showed that *Aegilops spp.* is very important source of Sr and Lr genes of resistance.

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RESISTANCE OF MALTING BARLEY CULTIVARS TO *RUSTS* AND *POWDERY MILDEW*

by

S. Stojanović,[1] Jovanka Stojanović[1], R. Jevtić[2], Z. Jerković[2], M. Milovanović[1] and S. Gudžić[3]
[1] Agricultural research Institute „Serbia", Belgrade
Center for Small Grains, Kragujevac
Institute of Field and Vegetable Crops, Novi Sad
Faculty of Agriculture, Pristina

Summary

In this paper resistance of 17 winter and 27 spring malting barley cultivars, selected in Yugoslavia, to Powdery Mildew, Leaf Rust and Stem Rust is presented.

A large number of tested cultivars has been susceptible. But, some cultivars were very resistant. Very high degree of resistance to Powdery Mildew showed the winter cultivars NS 183, NS 323, NS 311 and the spring ones Kraguj, Jelen, NS 300 and NS 324. Winter cultivars Jagodinac, NS 293 and NS 295, as well as spring cultivars Lazar, Viktor, Milan and NS 310 were resistant to Leaf Rust. The cultivars Biser, NS 293 and NS 295 were resistant to Stem Rust.

PSEUDOMONAS SYRINGAE PV HELIANTHI, A PATHOGEN OF STEAM AND PETIOLE OF SUNFLOWER

by

M. Arsenijević[1], Olivera Jovanović[2] and S. Maširević[3]

[1] Faculty of Agriculture, Novi Sad
[1] Institute for Plant Protection and Environment, Belgrade
[2] Faculty of Agriculture, Beograd-Zemun
[3] Institute for Field and Vegetable Crops, Novi Sad

Summary

Eleven investigated strains from diseased petiole and sunflower stems express common characteristics of pathogenic, cultural and biochemical nature.

On inoculated tobacco and pelargonium leaves and string bean pods they produce hypersensitive reaction, and typical changes on leaves, petiole and stem of sunflower.

On tomato, pepper and sour cherry fruits, the changes are atypical, characteristics for incompatible pathogen-host relationship. On peach shoots investigated strains do not produce any changes. (Table 1).

Bacteria are rod-shaped with polar flagellation, gramnegative and asporogenous. The colonies on NA medium are grey-white, round, convex and shine.

On King's medium B they produce green fluorescent pigment, catalase, NH_3, liquefied gelatin and do not produce H_2S, indol and nitrite from nitrate.

Bacteria are not grow at the temperature of 37°C, they grow in liquid medium with 5% NaCl.

Investigated strains produce levane, but oxidase, potato rot slices and arginine dichydrolase tests were negative and tobacco hypersensitive positive.

According Lopat tests they show these characteristics: + - - - +.

On the basis of pathogenicity, morphological, cultural and biochemical characteristics it was shown that investigated strains originated from diseased petiole and stem of sunflower belong to *Pseudomonas syringae pv. helianthi* (Kawamura) Young, Dye et Wilkie little investigated bacterium as pathogen of petiole and sunflower stem.

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INFLUENCE OF *MACROPHOMINA PHASEOLINA* ON SOYBEN YIELD AND YIELD COMPONENTS

by

M. Vidić, Milica Hrustić, M. Rajičić and S. Rellć
Institute of Field and Vegetable Crops, Novi Sad

Summary

In two - years field experiments the influence of *M. phaseolina* on soybean yield and yield components were investigated. The trials involved early soybean variety NS - 6 and late line NS - 320108. The experiments were conducted under natural conditions and artificial seed inoculations by microsclerotia.

In the July and August 1994, less rainfall and higer air temperature in comparison to the same period in 1995 caused considerably higer incidence of charcoal rot. Soybean seeds artificialy inoculated were highly significant increased the incidence of disease comparing to natural infection, in both years of investigation. Variety NS - 6 and line NS - 320108 were very susceptible, especially in the year with favorable conditions to the development of the pathogen. No significant differences in susceptibility between genotipes were observed. The statisticaly significiant and highly significant differences were obtained for interaction variety x treatment, in both years (table 2).

Average soybean yield was lower in artificial than in natural infection. In similar intensity of soybean infection the yield reduction was more expressed in earlier maturing genotipe (table 2).

In 1994 the artificial soybean seed inoculations were significantly decreased all soybean yield components, comparing to the natural infection, except the mass of thousand grains. In next year the differences were also present, but they were not statistically significant.

Negative correlations were observed between charcoal rot and yield, on the one hand, and disease intensity and yield components on the other. In 1994, all correlations were statistically significant, except the disease intensity and mass of thousand grains. In 1995, negative correlations were also present, but did not have statistical importance (table 3).

OCCURENCE OF THE *RHYNCHOSPORIUM SECALIS* AS BARLEY PATHOGEN IN SERBIA

by

Marijana Čoja
Faculty of Agriculture. Belgrade - Zemun

Summary

In spring 1994 a severe attack of the fungus *Rhynchosporium secalis* (Oud.) Davis was recorded on barley in the surroundings of Novi Sad and Kragujevac. The isolation of the fungus and studies of pathogenic, morphological and cultural characteristics of the 32 obtained isolates were performed using the method as described by R i c h a r d et al. (1956).

It was found that the fungus forms hyaline, two-celled conidia 13-26 x 4-8 µm in size, with prominent beak in the upper part. Differences in colony development were established in the appearance of pure cultures. Colonies can be black, brown, pink and yellow in colour.

Optimal temperatures for mycelium growth range within 15 and 20°C. Most of the isolates are photoindifferent. The acidity of the medium PDA was found not to have substantial effect on mycelium growth, but there were differences in the speed of growth on various media.

By microscopic examinations of the leaves diseased and on PDA isolation the fungus *R. secalis* was proved to be present on different barley genotypes.