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Original scientific papers

Zaštita bilja, Vol. 46(2), 212:85-95 (1995), Beograd

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Original scientific paper

EUROPEAN LEAF RUST OF WHEAT NURSERIES*)

The objecitve of this study was the interactions between genetically different sources of resistance of wheat to the wide spectrum of virulence of *Puccinia recondita tritici* tested in European leaf rust of wheat nurseries (ELRWN) on the large territories. The cultures of the pathogen from some other European regions have been used in differentiation of resistance sources, and that means that these sources have had priority over the description and classification of pathogenicity of *P. recondita tritici* population. Sixteen sources of resistance have been crossed with recurrent parents Princ and Starke. In three years period (1987-1989) the best genetically different hybrid lines and resistance sources (15 winter and 15 spring wheat lines) were tested in European leaf rust of wheat field nurseries (ELRWN).

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

Introduction

Since long distance dissemination of rust pathogens is well - established phenomenon (Dinor and Levi, 1971; Watson and Butler, 1984; Nagrajan and Singh, 1975; 1990), the best method of rust pathogens control are international cooperative studies which would cover large epidemilogical areas (Bošković, 1976; Bošković and Bošković, 1988; Stubbs, 1972; Stubbs et al, 1974). In European - Mediterranean analysis of *Puccinia recondita* Rob. ex Desm. f.sp. *tritici* Eriks. et Henn., population single resistant Lr genes used have not shown satisfactory efficiency (Bošković, 1976; Bošković and Browder, 1976; Bošković, 1980; Bošković and Bošković, 1988). It became clear that these regions needed new more efficient resistance genes and large testings followed by crossing program started in that time (Bošković and Momčilović, 1979; 1984).

*) This paper was presented at the third Yugoslavian Congress for Plant Protection, Vrnjačka Banja, 03-07, 10.1994.
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PATHOGENIC AND BACTERIOLOGICAL CHARACTERISTICS OF *ERWINIA AMYLOVORA*, THE PATHOGEN OF PEAR AND QUINCE-TREES IN MACEDONIA

by

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Summary

Fire blight, caused by *Erwinia amylovora* (Burrill 1882) Winslow et al. 1920, is very destructive disease for pear, quince and less to apple tree in Macedonia. The pathogen recently a quarantine bacterium for our country, has already been caused considerable damages with tendency of further spreading.

The purpose of the present study was: (1) to show economic importans and distribution of *E. amylovora* in Macedonia, (2) to test their patogenicity, (3) to verify their properties by morphological, biochemical and physiological tests and (4) to compare the strains isolated in Macedonia with autentic strain from France.

The disease was registered in 15 communities or the total surface of Macedonia was estimated of about 500 ha under pear and about 60 ha under quince trees. Great part of these surfaces was already cleared. The expenses for celaning and planting new seedlings could be estimated on about 10.000.000 DEM.

From eighty three isolates of *E. amylovora*, 47 from Pear and 36 from quince trees, isolated during 1991. and 1992., eight isolates and two reisolates were studied in detail (tab. 1, 2 and 3). The strains were examined by morfological, biochemical, physiological and pathological features (tab. 2 and 3). These properties indicate that all *E. amylovora* investigated strains constitute a homogeneous populations, regardless of their host plant, place (locality) or date of isolation.

Our investigation showed that strains from Macedonia are identical to *E. amylovora*, bacterium the causal agent of "fire blight" disease of the pomaceous trees and that it did not constitute a special strains of the pathogen.

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EFFECTS OF LIGHT AND TEMPERATURE INTENSITY ON REEMERGENCE OF SORGHUM HALEPENSE

by

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Summary

Several years investigations on herbicide kvizalofop-etyl and fenoksaprop-etyl on *Sorghum halepense* in sugar-beet and pears were carried out.

The efficiency of these herbicides was very good in sugar-beet and weak in pears, although they were applied in the same quantities and almost in the same way. In order to clear up the difference in the efficiency, the misurations of light and temperature intensity as the most important factors for this kind of occurence were carried out. It was proved that those two ecological parameters were decisive in the retrovegetation of *Sorghum halepense*. Namely, as an extreme heliofit and thermofit this species had favorable light and temperature conditions during the whole vegetation period in pear, due to the way of growing.

In contrast to pear, in sugar-beet favorable conditions lasted only untill the crop closed the rows.

Zaštita bilja, Vol. 46(2), 212:127-134 (1995), Beograd

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Original scientific paper

CONTRIBUTION TO THE STUDY OF FUNGI OF THE ERYSIPHE GENUS IN YUGOSLAVIA

The fungi *Erysiphe catalpae, Erysiphe fischeri* and *Erysiphe urticae* as well as powdery mildew disease on *Catalpa bignonioides, Senecio vulgaris* and *Urtica dioica* have been studied for the first time in Yugoslavia.

Key words: powdery mildew, *Erysiphe, catalpae, Erysiphe fischeri, Erysiphe urticae*, host plant, *Catalpa bignonioides, Senecio vulgaris* and *Urtica dioica*.

Introduction

The fungi of *Erysiphe* (DC) Fr. genus are obligate parasites of a large number of plants. In our country, greater attentions has been paid to the study of the agents of powdery mildew on cultivated crops. However the taxonomic characteristics of these fungi and their presence on various host plants has been less studied (Ranojević, 1910, Ranković, 1988, 1989, 1991).

The aim of the paper is to study the new agents of powdery mildew in Yugoslavia, first of all from the aspect of taxonomic characteristics and their presence of host plant species.

Materials and methods

The plants affected by powdery mildew were sampled in Serbia from 1986 to 1994.

Live samples of mycelium, conidiophores and conidia were studied by a microscope, by immersing in a drop of water of the glass disc. Simultaneously with the determination of the type of conidiophores and measuring the sizes of conidia, their germination was studied by the usual methodology (Hirata, 1942, Zaracovitis, 1965, Ranković, 1988), and the method of conidial germination, appearance and distribution of germ tubes and apressoria in them was studied by microscope.

In the stage of clestothecia, mainly the herbarized specimens of fungi were studied. The microscope was used to determione: diameter of cleistothecia, size of wall cells, length, form and distribution of appendages, number of asci in cleistothecium and their size; number, form and size of ascospores.

The values of the above characters have been based on microscopic analysis and measuring of 200 samples of each character. The data have been statistically processed and shown in tables as limited values and typical values (Blumer, 1967, Ranković, 1988).

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ERYSIPHE BIOCELLATA, ERYSIPHE BUHRII AND ERYSIPHE LYTHRII NEW PARASITES OF SOME PLANT SPECIES IN YUGOSLAVIA

Erysiphe biocellata, Erysiphe buhrii **and** ***Erysiphe lythrii*** **have been recorded and described for the first time in Yugoslavia as agents of powdery mildew on plant species:** *Lycopus europaeus* L, *Lycopus exaltatus* L, *Mentha aquatica* L, *Mentha arvensis* L, *Prunella vulgaris*, L, *Silena alba* (Mill) Krause, *Silene viridiflora* L, and *Lythrum salicaria* L.

Key words: powdery mildew, ***Erysiphe biocellata, Erysiphe buhrii, Erysiphe lythrii,*** host plant, ***Lycopus europeaus, Lycopus exaltatus, Lythrum salicaria, Mentha aquatica, Mentha arvensis, Prunella vulgaris, Silene alba*** **and** ***Silene viridiflora.***

Introduction

Powdery mildews, caused by the fungi from the family Erysiphaceae Lév. Belong to the most frequent plant diseases. They regenerate very quickly, and expand in a relatively short time throughout the surface of plant organs causing great damage. That is why the study of these fungi is very important, first of all organize for the application of the required protection measures.

In Yugoslavia, they were mainly studied on cultivated crops (Radosavljević, 1992, Josifović, 1929, Perišić, 1952, Stojanović and Kostić, 1956, Spasić, 1961, Arsić, 1965, Smiljaković, 1966, Jovanović, 1969, Arsenijević, 1983, Ristić, 1985). The specter of species and their taxonomic characteristics were studied by fewer researchers (Ranojević, 1910, Ranković, 1988, 1989, 1991).

The aim of the paper was to investigate the occurence of some fungi of *Erysiphe* (DC) Fr. genus on host plants in Yugoslavia, and their taxonomic characteristics.

Material and methods

The plants affected by powdery mildew were sampled in Serbia from 1986 to 1994 after which they were processed in the laboratory and herborized. The fungi from fresh plants were analyzed in their conidial (anamorphic) stage of development. Another portion of samples consisted of plants on which the presence of cleistothecia was confirmed, and which were analyzed of the fresh and herborized material.

Fresh material was collected in the field and each sample was placed in a tightly closed polyvinyl bag, in order to prevent the intermixture of cleistothecia or conidia of the fungi from different hosts. In order to

INVESTIGATION ON THE POSSIBILITY OF CONTROL OF *LEPTINOTARSA DECEMLINEATA* RESISTANT TO ORGANOPHOSPHOROUS AND CARABAMATE INSECTICIDES BY ABAMECITINE

by

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Summary

In the investigations on the abamectine effect (preparation Vertimec) in laboratory and field conditions in the course of 1992, 1993 and 1994, it was proved that the preparation Vertimec in the concentrations of 0.05% and 0.1% manifested a very high efficiency on the larvae of the Colorado Potato Beetle, resistant to organophosphorous and carabamate insecticides. The initial toxicity to imagoes was low, but the lethal effect was obtained after 48 hours. The preparation had no toxic effect on eggs nor on embriogenesis, but the larvae died in the course of hatching or immediately after that. The efficiency in the control of the resistant populations of the Colorado Potato Beetle to organophosphorous and carabamate insecticides and the persistence of the preparation Vertimec in field conditions was satisfactory.

THE INFLUENCE OF THE DIET OF *COELOIDES SCOLYTICIDA WESM. (HYMENOPTERA: BRACONIDAE)* ON THE PARASITY OF BIG ELM BARK BEETLE *SCOLYTUS SCOLYTUS (F.) COLEOPTERA: SCOLYTIDAE)*

by

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Summary

Coeloides scolyticidia Wesm. has an important role in the complex of the parasites of elm bark beetle, especially *S. scolytus* which is one of the vectors of spores of the fungus *Ceratocystis ulmi Moreau (Buis.)*. This is an ectoparasite which is completely adapted to the growth of the main host *S. scolytus*.

In laboratory conditions, the nectare of melliferous plants, first of all *Stachis recta* L. (*Lamiaceae*) and *Sinapis alba* L. (*Brasicaceae*) and Parker's diet, extended the life of the wasp *C. scolyticida* for more than 15 days in relation to the wasps withought additional diet. The wasps fed by Parker's diet had the longest life (females on the average 21,6 in the first, 19,3 and 19,4 days in the second generation. The wasps fed with the nectare of *S. recta* (at the temperature of 14-29°C) lived on the average 13,5 days (females) and 10,1 days (males); *S. alba* (at the temperature of 13-28°C) 12,3 days (female) and 9,4 days (males) and *Trifolium repens* L. (*Fabaceae*) (at the temperature of 16-31°C), 7,6 days (females) and 6,2 days (males). The wasps of *C. scolyticida*, which was not fed additionaly, lived on the average 5-6 days (females) and about 5 days (males).

Additional diet of *C. scolyticida* with approximately same number of maternal galleries of *S. scolytus* (18-20) and different number of parazited wasps (9-32) had notable effect on the parasity of *S. scolytus*. The imagoes of *C. scolyticidia* fed with Parker's diet decreased the numerosity of the Big Elm Bark Beetle in the first generation for 40,1%, then fro 93,7% (raised from August 9) and for 65% (from August 19) in the second generation. The diet of the wasps *C. scolyticida* by the nectare of *S. recta* influenced the reduction of the second generation for of the big elm bark beetle for 79,2%. *S. alba* in the first generation for 42,7% and *T. repens* in the second generation for 27,2%. In the lack of additional feeding of *C. scolyticida*, the parasity of *S. scolytus* was 9,2% in the first and 22,4% and 28,2% respectively in the second generation.

The number of descendants of one wasp of *C. scolyticida* fed by Parker's diet was on the average 17,3 in the first, and 16,2 in the second generation (0,57 sexual index) (raising started on August 9) and 16,3 (raising started on August 19). A slightly lower number of descendants of one wasp was obtained when they fed by the nectare of *S. recta* (on the average 14,6) (0,54 sexual index) and on *S. alba* (on the average 12,7). *T. repens* had no big influence on the reproduction of this useful insect (8,3 was obtained on the average per female, in relation to about 6-7 descendents when the wasps did not have any additional diet).