

INSTITUT ZA ZAŠTITU BILJA I ŽIVOTNU SREDINU - BEOGRAD
INSTITUTE FOR PLANT PROTECTION AND ENVIRONMENT - BELGRADE

ZAŠTITA BILJA PLANT PROTECTION

VOL. 45 (1), No 207, 1994.

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(Primljeno 2.08.1993.)

THE BROWN ROT FUNGI OF FRUIT TREES

by

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Summary

The brown rot of fruits, blossom blight and twig blight of fruit trees are caused by the three parasitic species of fungi, which belong to the genus *Monilinia*: *M. laxa* (Aderh. and Ruhl.) Honey, *M. fructigena* (Aderh. and Ruhl.) Honey and *M. fructicola* (Wint.) Honey. On the stone fruit trees in Montenegro, the two first species has been found.

In this paper a survey of the work on the occurrence and identification of these fungi, carried out in the world and in our country is given. The history of the taxonomical place and nomenclature of the fungi, from the first report till now, is presented.

The brown rot fungi (*Monilinia* spp.) are widely distributed throughout the world and depending not only upon climatic conditions, but also upon the susceptibility of the fruit trees species and their cultivars, the damages caused by these parasites might be severe.

The life cycles of the brow rot fungi, their morphology and survival, conditions making them possible to infect the various parts of host plants, the symptoms of disease, ecological, physiological and pathological characteristics of parasite and way of its spreading, have been studied by many scientists from all over the world. The data on their investigations have been summarized in this paper.

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(Primljeno 1.02.1994.)

DISTRIBUTION AND HARMFUL EFFECT OF *DIABROTICA VIRGIFERA*
LeConte (*COLEOPTERA, CHRYSOMELIDAE*),
A NEW MAIZE PEST IN YUGOSLAVIA

by

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Summary

In 1992, in the vicinity of Surčin airport, some unknown symptoms of maize destruction were recorded. The symptoms on the damaged plants pointed out that *Diabrotica virgifera* LeConte is in question. This pest has not been present so far on the territory of Yugoslavia, such as in Europe. Due to this, in 1993 it was necessary to prove this harmful species distribution area and manifested harmfulness.

During the maize vegetation in 1993, the occurrence of the imagoes of *D. virgifera* were registered on the territory of Srem, in the zone of Boljevci-Popinci-Golubinci-Indija to the mouth of the river of Sava to the Danube, then south of the Danube at Višnjička Banja and east of the Danube at Borča (Figure 1).

In this zone the population density of *D. virgifera* varies considerably (Tab. 1). The largest number of insects were recorded in the immediate vicinity of Surčin aeroport. The number of recorded imagos is considerably lower in the fields in the surroundings of Surčin and then in the localities in the direction of Boljevci, Dobanovci, Ugrinovci, Batajnica and Zemun. In other localities sporadic number of imagos was proved.

Considerable damages on maize were registered in the narrow zone immediately near the airport. In this zone the damages were also registered in 1992, but of lower intensity. The most of maize growers reacted spontaneously changing the culture in 1993. A part of them sew maize on the same parcels also in 1993 and there a disastrous damage occurred (Fig. 2). On these parcels over 80% of the plants died, while kernel yield was not able to cover the expences. The larvae of *D. virgifera* damage maize gnawing and boring into the roots. On the most plants attacked, the larvae damage completely the main and lateral roots (Fig. 3). The damages made by the larvae were important more than those occurred due to the nutrition of the adults in July and August.

The adults feed with the overground parts of the plant. On the sites with a large number of the pests, sporadic damages of leaf mass occurred, reminded in appearance on the damages made by Leaf Cereal Beetle on maize leaves. At the end of July occurred the intensive nutrition of imagoes on corn silk and corn broom. On corncobs the silk was completely gnawed all to the inside part of corncobs. At a part of the plants, the silk was previously gnawed, which resulted in considerable reducing of the number of kernels. The nutrition of the adults with pollen was also intensive.

CHARACTERISTICS OF *ERWINIA CAROTOVORA* SUBSP. *ATROSEPTICA* AND *ERWINIA CAROTOVORA* SUBSP. *CAROTOVORA* STRAINS ISOLATED FROM THE DISEASED STEMS AND TUBERS OF POTATO

by

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Summary

The investigations on 14 strains of bacteria, eight isolated from the diseased stem and six from the rotted potato tubers, proved that all of them belong to the group "*Erwinia carotovora*".

All 14 strains have in common, disregarding their origin (potato tuber or stem), negative Gram stain, peritrich flagellation nonfluorescence on King's medium B, absence of HIR tobacco and oxidase, and producing catalase and acid from glucose in O/F test (Tab. 1).

Concerning the pathogenicity, all the strains cause more or less the same degree of rot of inoculated potato and carrot slices, but not of onion, with what they differ considerably (Tab. 1).

Besides the creating of the reducing substances from sucrose, by some strains and their behavior toward erythromycin, the obtained results are in accordance with the literature data, such as also the growth on the Logan's medium and the coinciding of the serological reaction in ELISA test (Tab. 2).

Due to this, based on the obtained results it can be concluded that the strains Kr-12 to Kr-45 (originating from the diseased stem) belong to the bacterium *Erwinia carotovora* subsp. *atroseptica*, and those from Kr-23 to Kr-155 (isolated from stem and tubers) were identified as *E.c. ssp. carotovora*.

The strain Kr-262 (isolated from the diseased potato stem), creating indole and phosphatase, has the characteristics of *E. chrysanthemi*, and non creating lecithinase, it stands out of the characteristics of this bacterium (Tab. 2).

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UDC: 631.52:633.11:632 (4) (7)
AGRIS: F30 H00 G810 G300
Original scientific paper

IDENTIFICATION AND TRANSFER OF WHEAT GENES FOR RESISTANCE TO PATHOGENIC BIOTYPES OF PUCCINIA RECONDITA TRITICI PREVALENT IN EUROPE AND USA

The objective of this study were hybrid lines selected from progenies of the crosses between the developed donors of resistance and the varieties Prince and Starke. Last three years these progenies were screened for resistance to several cultures of *Puccinia recondita tritici* in order to gain knowledge of different genetic constitution of resistance. Working on the program of screening and selection, we produced new hybrid lines of wheat possessing genetically different homozygous high resistance to *P. recondita tritici*. It was proved that the resistance patterns of these lines were similar, but not identical to those of Lr9, Lr19, Lr24, the only efficient genes. At the same time, it means that these new hybrid lines of ours do not possess these particular genes. It was concluded that it is feasible to produce high resistance by recombining the known or unknown weak resistance genes. These lines, as well as the other ones are used in a new approach for international survey of *P. recondita tritici*.

Key words: wheat, leaf rust, disease resistance, sources of resistance.

Introduction

In the most wheat-growing regions of the world, leaf rust is the chief problem preventing susceptible varieties from achieving high and stable yields.

Selections for resistance is the best way of controlling the disease, but it implies the availability of a sufficient number of resistance genes that could be incorporated, either single or combined, in new varieties.

The known wheat lines possessing single genes of resistance to *Puccinia recondita* Rob. ex Desm. f. sp. *tritici*, Eriks, and Henn., in the variety Thatcher (Dyck and Samborski, 1960; Samborski and Dyck, 1968; Haggag et al., 1973), as well as the majority of Lr lines that have been developed so far, do not display satisfactory resistance to the parasite's population in Europe and parts of Asia and Africa (Bošković, 1976; Bošković and Browder, 1976; Bošković, 1980; Nagarajan i Singh, 1975; 1990;).

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UDC: 632.4:634.75 (497.1)
AGRIS: H20 0960 G832
Original scientific paper

BLACK CROWN AND ROOT ROT OF STRAWBERRIES IN YUGOSLAVIA

Black root and crown rot of strawberries followed by stunting, wilting and petiole necrosis was discovered in Yugoslavia in the vicinity of Mala Ivanča, Plandište, Čačak, Leskovac, Vranje and Bosanska Dubica. *Pythium ultimum*, *P. irregulare* and *P. intermedium*, *Mortierella* sp., *Trichoderma lignorum* and *Rhizoctonia* (*Ceratohiza*) *fragariae*, or according to new approaches in taxonomy of *Rhizoctonia* sp. - binucleate *Rhizoctonia* sp. AG-A and AG-I were isolated from diseased roots, crowns and petioles. Among all isolates only *R. fragariae* proved to be pathogenic to strawberry.

Key words: strawberry, black root rot, *Rhizoctonia fragariae*, binucleate *Rhizoctonia* sp.

Introduction

On strawberry in Yugoslavia the following plant pathogenic fungi, viruses and mikoplasma have been previously studied: *Mycosphaerella fragariae* (Perišić, 1950, 1951; Kišpatić, 1951; Arsić i Džodić, 1952; Jovičević, 1954; Šutić i Kljajić, 1954; Ganić, 1956; Mijušković, 1956; Festić i Delkić, 1976; Radman i sar., 1981); *Sphaeroteca macularis* (Arsić, 1964; 1965), *Dendrophoma obscurans* (Perišić i Pešić, 1975; Pešić, 1979), *Gnomonia comari* (Stojanović i Borić, 1976), *Gnomonia fragariae* (Radman i sar., 1981), *Botrytis cinerea* (Baltovski, 1971; Radman i sar., 1981; Perišić i sar., 1982), *Diplocarpon earliana* (Susuri i Hetemi, 1987), *Phyllosticta fragaricola*, *Alternaria tenuis*, *Epicoccum* sp., *Oidium* sp., *Fusarium* sp. (Radman i sar., 1981), *Verticillium dahliae* (Perišić i sar., 1988), than strawberry mottle virus and strawberry crinkle virus (Babović, 1964; 1969; 1970; Radman i sar., 1981) and green petal micoplasma (Perišić, 1960; Radman i sar., 1981).

Black root and crown rot of strawberries, a disease that has not been previously described in Yugoslavia, occurs in many regions where strawberry is grown. Etiology of this disease has been differently interpreted in literature. Fletcher (1917), Smith and Horne (1921 loc. cit Husain and McKeen, (1963) and Miller (1949) ascribed the killing of strawberry plants to noninfectious diseases, such are winter injury and water-logging or sudden drying out of the soil.

CONTRIBUTION TO THE STUDY OF *NAPOMYZA LATERALIS*
(Fallén) (DIPTERA, AGROMYZIDAE)

by

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Summary

Napomyza lateralis is holarctic species, with host-plants in Asteraceae (genera: *Anthemis*, *Bellis*, *Calendula*, *Hypochoeris*, *Matricaria*), but a favourite one in *Matricaria inodora* L.

This species has been known in Serbia (Morović, Zaječar) earlier, but without data on host-plant.

During 1991/92., from the localities of Vinča and Goč (Serbia), the flies obtained from flower-heads of *M. inodora*.

Description of flies, male genitalia and bionomics of *N. lateralis* are presented in this paper.

Oviposition takes place in the capitulum or in the upper part of stem (Fig. 4, 5.), from where larva moves upwards to the flower-head, where it feeds and pupates. Such flower-heads are empty and full with excrements and larval's skin.

Napomyza lateralis has two generations in the year, and hibernates in pupal stage in dry plants.

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(Primljeno 29.06.1993.)

VIRULENCE OF DIAPORTHE PHASEOLORUM VAR. CAULIVORA ISOLATES IN SOYBEAN

by

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Summary

In continuation of a study of variability of the local population of *Diaporthe phaseolorum* (Cke. et Ell.) Sacc. var. *caulivora* Athow et Caldwell, we tested the isolates S1 - "Novi Sad" and S4 - "Erdevik", originating from the Vojvodina Province, which had differed in virulence in the previous cycle of investigation. Virulence was determined on the basis of the beginning and dynamics of wilting of soybean seedlings in inoculated with the toothpick method.

The reaction of the American varieties Granger, Mandarin, and Elgin BC and the domestic line NS-L-2023 showed that S4- "Erdevik" isolate was considerably more virulent than S1 - "Novi Sad". The largest differences were observed in Granger and Mandarin which were highly susceptible to S4 - "Erdevik" and showed high level of resistance to the S1 - "Novi Sad". Elgin BC was almost equally susceptible to the both isolates. NS-L-2023 showed the largest difference in the beginning of seedling wilting. Although S4 - "Erdevik" caused a more intensive wilting than S1 - "Novi Sad" throughout the test period, the percentage of wilted NS-L-2023 seedlings was almost identical at the end of the period.

The differences in reaction observed among the combinations "variety x isolate" indicate that the tested genotypes could be used as differentiators of physiological races of *D. phaseolorum* var. *caulivora*.